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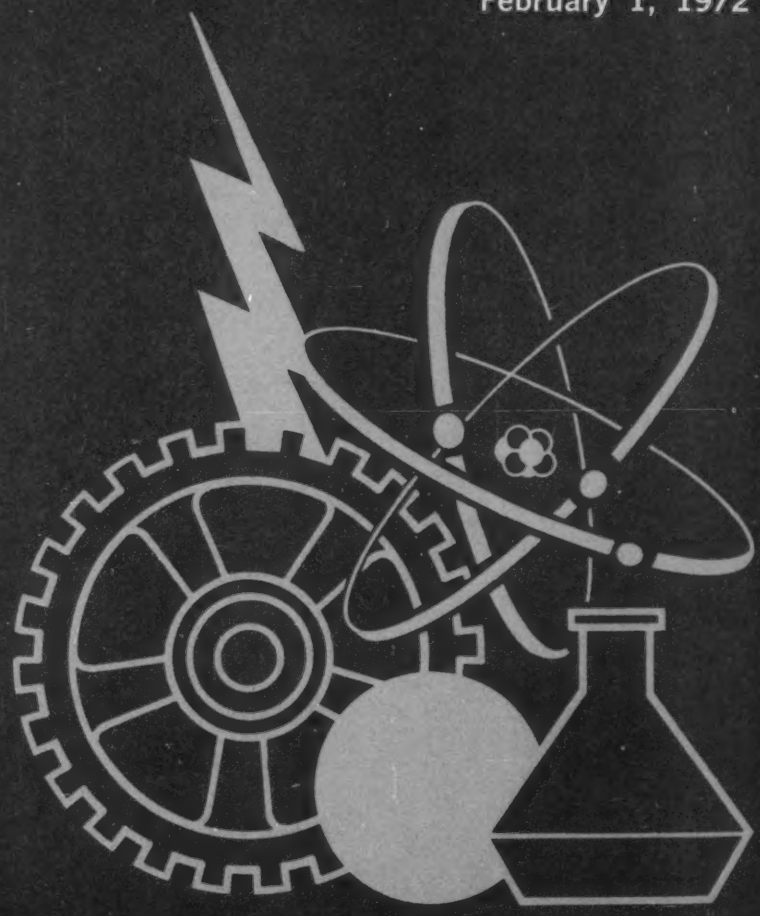

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

February 1, 1972 Volume 895 Number 1

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PATENT OFFICE NOTICES

Robert Gottschalk Appointed Commissioner of Patents

The Office of the White House Press Secretary released the following on January 4, 1972:

THE WHITE HOUSE

The President today announced the recess appointment of Robert Gottschalk as Commissioner of Patents. He will succeed William E. Schuyler, Jr., whose resignation was accepted effective August 25, 1971. On November 12, 1971, the President nominated Donald W. Banner of Chicago, Illinois for this position. The nomination was not confirmed prior to Senate adjournment, and Banner has asked that for personal reasons his name not be resubmitted to the next session.

Gottschalk is presently the First Assistant Commissioner of Patents, a position to which he was appointed by the President on May 20, 1970. From 1965 to February 1970, Gottschalk served as Director of Patents for GAF Corporation in New York City. He was graduated from McGill University in 1931 and received his law degree from St. Lawrence University in 1934.

Following graduation he entered into the private practice of patent and trademark law. In 1941, he became the patent and trademark counsel for the Corn Products Company. From 1946 to 1961 he was employed by Standard Oil of Indiana—first as assistant manager of the patent department, and finally as director of contract and legal matters. In 1961 he became the general patent counsel for the Canteen Corporation. From 1964 to 1965, Gottschalk was the managing director of his own firm, Robert Gottschalk Associates.

He is married to the former Elizabeth Papenhausen. They have one son and reside in McLean, Virginia.

* * * * *

Oath of Office administered Friday, January 7, 1972.

TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

Chapter I—Patent Office, Department of Commerce

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

Access to Pending Applications

A proposal was published at 36 F.R. 16194 to amend § 2.27 by deleting the requirement to show good cause in order to obtain access to a pending application file.

After consideration of all comments and suggestions submitted by interested persons, the amendment as proposed is hereby adopted, subject to the following changes:

1. The title of § 2,27 is changed by inserting the word "trademark" after the word "pending."

2. In paragraph (b) of § 2.27 the word "trademark" after the word "pending" is deleted.

Access to a pending application will be granted upon oral request at the office of the Director of the Trademark Examining Operation. The files will be ordered at 2 p.m. each day and will usually be available for inspection by 3 p.m. the same day. Files must be inspected in the presence of office personnel and papers may not be removed without authorization. Copies of the contents of files may be made only in the Trademark Search Room or by the Document Service Branch. Written requests for copies of the contents of application files may be addressed to the Document Service Branch; the cost is 30 cents per page.

The procedure for access to published and registered files and terminated inter partes proceedings will remain unchanged. Access to a published application is granted by request in the Trademark Docket Section. In order to obtain access to a registered file or terminated inter partes proceeding, an order must be placed in the Trademark Docket Section. These files are available either the same day or the morning of the following day.

Effective date. This amendment is effective on the date of its publication in the Federal Register (12–31–71).

ROBERT GOTTSCHALK,
Acting Commissioner of Patents.

December 21, 1971.

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

December 22, 1971.

The text of the revised section is as follows:

§ 2.27 *Pending trademark application index; access to applications.*

(a) An index of pending applications including the name and address of the applicant, a reproduction or description of the mark, the goods or services with which the mark is used, the class number, the dates of use and the serial number and filing date of the application will be available for public inspection as soon as practicable after filing.

(b) Access to the file of a particular pending application will be permitted prior to publication under § 2.81 upon written request.

(c) Decisions of the Commissioner and the Trademark Trial and Appeal Board in applications and proceedings relating thereto are published or available for inspection or publication.

(d) After a mark has been registered, or published for opposition, the file of the application and all proceedings relating thereto are available for public inspection and copies of the papers may be furnished upon paying the fee therefor.

[F.R. Doc. 71–19081; Filed 12–30–71; 8:45 a.m.]

Published in F.R. 24506, Dec. 31, 1971

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,611,813, Sharpless and Eichert, Jr., MAGNETIC DATA STORAGE SYSTEM, **filed** May 22, 1968, D.C. Md. (Baltimore), Doc. 19515, *Technitrol, Inc.* v. *Scientific Data Systems, Inc. (Xerox Corporation substituted for Scientific Data Systems, Inc.).* Agreed, settled, satisfied and dismissed with prejudice as to Xerox Corporation, Sept. 2, 1971.

2,690,518, Fyler and Rowe, COLOR PICTURE TUBE; **3,179,836,** J. Giuffrida, COMPENSATION FOR EARTH'S MAGNETIC FIELD BY COLOR DOT DISPLACEMENT; **3,222,172,** same, METHOD FOR MAKING COLOR TELEVISION PICTURE TUBES, **filed** Mar. 15, 1971, D.C., N.D.N.Y. (Utica), Doc. 71–CV–118 and 119, *General Electric Company* v. *Columbia Broadcasting System, Inc.*

2,750,055, J. D. Huffines, REFUSE COMPRESSOR MECHANISM FOR VEHICLES, **filed** Aug. 24, 1971, D.C., W.D. Pa. (Pittsburgh), Doc. CA71–789, *James Donie Huffines* v. *Thiele, Inc. et al.*

2,771,759, Leath and Bobo, Jr., TEXTILE PRODUCT AND METHOD, **filed** Jan. 5, 1971, D.C. Puerto Rico (San Juan), Doc. C–3–71, *Patentex, Inc.* v. *Manhattan Hosiery Corp. and United Hosiery Mills, Ltd.*

2,779,399, Zink and Reed, FLARE STACK GAS BURNER; **3,134,424,** same, FLARE STACK GAS BURNER ASSEMBLY, **filed** Aug. 2, 1971, D.C., S.D. Tex. (Houston), Doc. CA71–H–844, *John Zink Company* v. *National Airoil Burner Co., Inc.*

2,798,621, L. W. Tracy, SELF-LOADING VEHICLE, **filed** June 25, 1971, D.C. Oreg. (Portland), Doc. 71–454, *Ray Reese, doing business as Advance Axle & Trailer Co., and E. Dale Frodsham* v. *Commercial Bodybuilders, Inc. et al.*

2,948,928, Ebneth and Falk, PROCESS FOR MANUFACTURING FOAMED POLYURETHANE ARTICLES, **filed** Mar. 11, 1971, D.C.N.J. (Newark), Doc. 363–71, *Mobay Chemical Company and Farbenfabriken Bayer Aktiengesellschaft* v. *Hudson Foam Plastics Corporation et al.* Consent order of dismissal, June 23, 1971.

2,950,318, S. H. Shapiro, PROCESS FOR THE PRODUCTION OF QUATERNARY AMMONIUM COMPOUNDS; 3,222,402, M. C. Cooperman, PREPARATION OF N-ALIPHATIC TRIMETHYLENE DIAMINES, filed Feb. 26, 1968, D.C., W.D. Tenn. (Memphis), Doc. C-68-40, *Armour & Company and Armour Industrial Chemical Co.* v. *Enenco Inc.* Plaintiffs' motion to dismiss the counterclaim on 3,222,402 be denied, July 15, 1971.

2,981,689, E. Albers-Schoenberg, SQUARE LOOP FERRITES, filed Feb. 22, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c478, *Electronic Memories & Magnetics Corp.* v. *Control Data Corp.* On motion of the plaintiff, cause is dismissed, June 23, 1971.

3,011,057, H. O. Anger, RADIATION IMAGE DEVICE, filed June 21, 1968, D.C. Conn. (New Haven), Doc. 12618, *Hal O. Anger, Nuclear Chicago Corporation* v. *Intertech, Inc. and Picker Corporation.* Consent judgment, defendant has infringed each of claims 1 and 3 through 18. Injunction entered, July 1, 1971.

3,037,659, W. H. Frederick, NESTING AND STACKING BASKET, filed Sept. 2, 1971, D.C., E.D. Tex. (Tyler), Doc. 5352, *William H. Frederick; Nathan Gilbert and Banner Metals, Inc.* v. *AAA Wire Products, Inc.*

3,050,087, D. M. Caplan, FLEXIBLE HOSE; 3,194,705, same, METHOD AND APPARATUS FOR MAKING REINFORCED CORRUGATED HOSE, filed June 23, 1971, D.C., W.D. Pa. (Pitsburgh), Doc. 71-587, *Carlisle Corporation* v. *H. K. Porter Company, Inc.*

3,090,300, L. G. Dubuit, SILK SCREEN PRINTING MACHINE, filed Aug. 18, 1969, D.C., W.D.N.C. (Charlotte), Doc. 2525, *Louis Gilbert Dubuit, Machines Dubuit and American Screen Process Equipment Company* v. *Harwell Enterprises, Inc., and Roy M. Harwell, Jr.* Motion for summary judgment granted to defendant, Aug. 30, 1971.

3,095,777, R. L. Hallock, DRIVEN FASTENER HAVING PENETRATING POINT FOR ATTACHING OBJECTS TO METAL, filed Dec. 11, 1970, D.C., S.D. Ohio (Dayton), Doc. 3981, *Gripnail Corp. and Robert L. Hallock* v. *H. A. Jones Co., Inc.*

3,098,748, Noznick and Tatter, WHIPPING AND POWDERED SHORTENING COMPOSITIONS, filed May 17, 1968, D.C.N.J. (Trenton), Doc. No. 485-68, *National Dairy Products Corporation* v. *Beatrice Foods Co.* Judgment declaring patent invalid and dismissed counterclaim, Sept. 16, 1971.

3,134,424. (See 2,779,399.)

3,153,254, Lenz and Scinta, WINDSHIELD WIPER, filed July 12, 1971, D.C. Conn. (Bridgeport), Doc. B-323, *Trico Products Corporation* v. *Roberk Company.*

3,179,836. (See 2,690,518.)

3,194,705. (See 3,050,087.)

3,222,402. (See 2,950,318.)

3,249,384, R. M. Timms, SPRING SUPPORTED SADDLE, filed July 28, 1971, D.C. Conn. (Bridgeport), Doc. B-331, *The Troxel Manufacturing Company* v. *Mesinger Manufacturing Company, Inc.*

3,261,330, P. Arant, INTERLOCKED WATER AND FUEL SYSTEM FOR STEAM CLEANERS AND THE LIKE, filed June 30, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71-1527-R, *Clayton Manufacturing Co.* v. *Manufacturers Motor Products Co. and Homestead Industries, Inc.*

3,326,602, Lombard and Blaese, METHOD OF AND APPARATUS FOR COOKING, filed May 17, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c24, *Restaurant Technology, Inc.* v. *Geropco Inc.*

3,329,852, Saussele and Menzel, DIRECT-CURRENT MOTOR WITH PERMANENT-MAGNET ROTOR AND SEQUENTIALLY ENERGIZED STATOR WINDINGS, filed Aug. 18, 1971, D.C.N.J. (Newark), Doc. 1241-71, *Gebr. Beuhler Nachfolger GmbH, etc.* v. *Siemens-Schuckertwerke Aktiengesellschaft, etc.*

3,332,544, A. H. Willinger, PACKAGING ARRANGEMENT FOR AN AQUARIUM, filed Mar. 19, 1969, D.C., E.D.N.Y. (Brooklyn), Doc. 69-C-294, *Metaframe Corp.* v. *Miracle Pet Products, Inc. et al.* Consent judgment for injunction, Aug. 4, 1971.

3,379,228, Carlberg and Siegal, PORTABLE SAW TABLE; 3,379,229, B. L. Siegal, same, filed July 30, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1875, *Porta-Table Corporation* v. *Kaiser Aluminum and Chemical Sales, Inc.*

3,379,229. (See 3,379,228.)

3,402,657. (See Re. 26,240.)

3,448,178, T. P. Flanagan, HOT MELT ADHESIVES COMPRISING ETHYLENE/VINYL ACETATE COPOLYMERS AND ALPHA-PINENE/PHENOL CONDENSATION PRODUCTS, filed Sept. 21, 1971, *National Starch and Chemical Corporation* v. *Findley Adhesives, Inc.*

3,527,018, D. E. Jahnke, VACUUM PACKAGING OF POULTRY, filed Sept. 24, 1970, D.C., E.D. Wis. (Milwaukee), Doc. 70-C-525, *Vac-Air, Inc.* v. *John Mohr & Sons, Inc.* Judgment, defendant permanently enjoined, July 6, 1971.

Re. 26,240, C. I. Wasserman, HIGH SPEED PRINTERS WITH COLUMN SPANNING HAMMERS; 3,402,657, Potter, Foley and Antonucci, HIGH SPEED BELT PRINTER WITH PRINTING SLUG SUPPORTING MEANS, filed Sept. 9, 1971, D.C.R.I. (Providence), Doc. CA4711, *Potter Instrument Company, Inc.* v. *ODEC Computer Systems, Inc.*

D. 171,963, L. Blum, RAIL, filed June 25, 1969, D.C., S.D. Fla. (Miami), Doc. 69-797-JK, *Blumcraft of Pittsburgh* v. *Metallic Engineering Co., Inc.* Judgment with consent, entered in favor of plaintiff, July 29, 1971.

Certificates of Correction for the Week of Feb. 1, 1972

3,438,335	3,575,127	3,588,723	3,596,087
3,475,239	3,575,587	3,589,355	3,596,362
3,484,228	3,577,473	3,589,640	3,596,471
3,491,864	3,578,778	3,589,734	3,596,537
3,516,991	3,579,373	3,590,358	3,596,709
3,529,408	3,580,308	3,591,165	3,596,755
3,535,403	3,580,854	3,591,301	3,596,799
3,538,101	3,580,869	3,591,312	3,596,940
3,538,227	3,581,993	3,591,578	3,597,073
3,541,086	3,582,561	3,591,731	3,597,203
3,547,670	3,582,786	3,592,788	3,597,225
3,549,010	3,583,339	3,593,018	3,597,301
3,551,660	3,583,463	3,593,910	3,598,108
3,554,336	3,583,544	3,594,111	3,598,386
3,554,563	3,584,641	3,594,192	3,598,719
3,555,035	3,585,395	3,594,411	3,598,738
3,555,055	3,585,516	3,594,510	3,598,903
3,555,734	3,586,753	3,594,533	3,599,959
3,559,199	3,586,930	3,594,559	3,600,090
3,560,167	3,587,052	3,594,608	3,600,212
3,564,290	3,587,317	3,594,847	3,600,215
3,565,686	3,587,640	3,594,991	3,600,278
3,567,627	3,587,646	3,595,390	3,601,194
3,572,751	3,587,691	3,595,771	3,602,847
3,572,969	3,587,818	3,595,861	3,602,895
3,573,072	3,587,969	3,595,903	3,602,929
3,574,604	3,588,070	3,595,950	3,603,218
3,574,751			

Patents Available for Licensing or Sale

2,925,617. WINDSHIELD WIPER. Zelmer L. Williams, Rte. 2, Box 382, Olympia, Wash., 98501.

3,102,721. PANTAGRAPH EQUILIBRIUM SPRING MECHANISM. Paul D. Levie, 2333 N. Central Ave., Phoenix, Ariz., 85004.

3,455,301. MALE GENITAL APPLIANCE. Bruce P. CLARK, 133 17th St., Oakland, Calif., 94612.

3,458,893. ARTIFICIAL TREE LIMB TAPERING METHOD. Correspondence to: Seymour H. Miller, executive vice president, Masterpiece, Inc., 29 Elm Ave., Mount Vernon, N.Y., 10550.

3,563,237. DISTAL PHALANX BANDAGE. Edwin L. Maxwell, Washington, D.C. Correspondence to: Millen, Raptes & White, 503 Crystal Mall, Bldg. 1, 1911 Jefferson Davis Highway, Arlington, Va., 22202.

3,572,418. METHOD FOR ASSEMBLING MOLDING FLASKS WITH SAND CORES. Fritz Winter Eisengiesserei, Allendorf, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,584,506. FLOW METER. Kamekichi Shiba, Tokyo, Japan. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,589,562. PRESSURE POWERED AEROSOL TIMER. Willard E. Buck, Lake Havasu City, Ariz. Correspondence to: Fred Briggs, Jr., P.O. Box 1437, Lake Havasu City, Ariz., 86403.

3,596,307. ADUJSTABLE MOUNTING FOR DOORS. Samuel Kolmetsky, 17 Marion Ave., Westville, N.J., 08093.

3,606,856. CICLO AMPHIBIOUS. Ernesto O. Moraga. Correspondence to: Sherman Levy, Suite 635 Washington Bldg., 15th and New York Ave. NW., Washington, D.C., 20005.

3,611,633. METHOD AND APPARATUS FOR OUTDOOR FLOWER ARRANGEMENTS. Clarice W. Shackelford, 3628 13th St. NW., Washington, D.C., 20010.

3,612,070. POWER DRIVEN, HAND HELD HAIR CURLER. Robert M. Reyes, 614 Forest Ave., Los Angeles, Calif., 90033.

3,627,119. JACKETED BUNDLES OF RIGID BEVELED STRIP MATERIAL. William T. Pearce, 7994 E. Evans Creek Road, Rogue River, Oreg., 97537.

The following 3 patents are offered by: Phillip M. Wilson, 133 Whitelaw Ave., Wood River, Ill., 62095.

3,590,950. MECHANICS PORTABLE STEP FOR VEHICLE MAINTENANCE AND REPAIR.

3,518,024. ONE-HAND BOAT/CANOE SCULLING PADDLE.

3,618,230. RETREADERS TIRE DRYER AND CONDITIONING MACHINE.

General Electric Company is prepared to grant non-exclusive licenses under the following 50 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following patent may be addressed to: Division Patent Counsel, Switchgear Equipment Business Div., General Electric Company, 6901 Elmwood Ave., Philadelphia, Pa., 19142.

3,594,524. VACUUM-TYPE ELECTRIC CIRCUIT BREAKER.

Applications for license under the following 3 patents may be addressed to: Department Patent Counsel, Apollo and Ground Systems, General Electric Co., P.O. Box 2500, Daytona Beach, Fla., 32015.

3,575,616. SIGNAL CONDITIONER.

3,591,854. SIGNAL PHASE AND MAGNITUDE MEASUREMENT CIRCUIT.

3,593,156. FREQUENCY DOUBLER.

Applications for license under the following 46 patents may be addressed to: Patent Counsel Contractor Equipment Business Division, General Electric Co., 1285 Boston Ave., Bldg. 21ES, Bridgeport, Conn., 06602.

2,828,250. METHOD AND APPARATUS FOR THE ELECTROLYTIC OXIDATION OF COPPER WIRE.

2,831,050. CREPE PAPER INSULATION.

2,841,633. ELECTRICAL CABLE STRUCTURE.

2,922,804. BASIC LEAD p-NITROSOPHENOLATE.

2,930,083. EXTRUSION OF CROSS-LINKED POLYETHYLENE AND PROCESS OF COATING WIRE THEREBY.

2,991,268. CURABLE COMPOSITION OF POLYETHYLENE, DI-α-CUMYL PEROXIDE, CARBON BLACK, COAL DUST AND CURED PRODUCT THEREOF.

3,008,201. APPARATUS FOR THE CONTINUOUS FORMATION OF INTERMEDIATES.

3,060,053. METHOD AND APPARATUS FOR ACCRETING MOLTEN COPPER ON A MOVING MEMBER.

3,060,054. METHOD AND APPARATUS FOR ACCRETING MOLTEN MATERIAL ON A MOVING MEMBER.

3,060,055. METHOD AND APPARATUS FOR ACCRETING MOLTEN MATERIAL.

3,060,056. METHOD AND APPARATUS FOR CONTINUOUSLY ACCRETING MOLTEN MATERIAL.

3,094,752. DIP FORMING TUBING.

3,134,150. SUSPENSION SYSTEM.

3,145,119. FLOAT CASTING.

3,148,169. CURABLE POLYETHYLENE COMPOSITION COMPRISING PEROXIDE CONTAINING TERTIARY CARBON ATOMS, CLAY FILLER, AND AN ELECTRICAL CONDUCTOR INSULATED WITH THE COMPOSITION.

3,153,954. WIRE ROLLING SYSTEM AND METHOD.

3,161,541. SYNTHETIC RESIN AND CONDUCTORS INSULATED THEREWITH.

3,164,896. PROCESS FOR CONTINUOUS MANUFACTURE OF TUBING.

3,171,866. PEROXIDE CURED POLYETHYLENE WITH POLYVINYL CHLORIDE FILLER AND WIRE COATED WITH THE SAME.

3,188,305. CROSSLINKING OF VINYL HALIDE RESINS.

3,207,719. POLYVINYL CHLORIDE COMPOSITIONS CURED WITH TIN HALIDES.

3,207,720. POLYVINYL CHLORIDE COMPOSITIONS CURED WITH A METAL HALIDE.

3,207,721. POLYVINYL CHLORIDE COMPOSITIONS CURED WITH A COBALT HALIDE.

3,207,825. PROCESS FOR EXTRUDING POLYTETRAFLUOROETHYLENE-SILICONE RUBBER COMPOSITION.

3,235,960. PROCESS FOR THE CONTINUOUS FORMATION OF INTERMEDIATES.

3,264,692. INLET ORIFICE FOR CONTINUOUS CASTING APPARATUS.

3,286,018. POWER CABLE CONDUCTOR FOR REDUCING WINDAGE.

3,286,019. POROUS CONDUCTOR JACKET.

3,286,020. COVERING FOR POWER LINE CONDUCTORS TO REDUCE WINDAGE, CORONA LOSS AND RADIO FREQUENCY INTERFERENCE.

3,288,744. VINYL HALIDE RESINS STABILIZED WITH TRIS (HYDROXYMETHYL) AMINOMETHANE.

3,288,764. CURING OF CHLOROSULFONATED POLYETHYLENE.

3,288,879. VULCANIZATION OF RUBBER WITH AN ORGANO-HYDROGEN POLYSILOXANE AND A CHLORO-PLATININ ACID COMPOUND.

3,296,189. CHEMICALLY CROSS-LINKED POLYETHYLENE STABILIZED WITH POLYMERIZED TRIMETHYL QUINOLINE.

3,334,080. CURABLE COMPOSITION COMPRISING POLYETHYLENE AND 2,5-BIS(t-BUTYLPEROXY)-2,5-DIPHENYLHEXYNE-3.

3,346,444. ELECTRICALLY CONDUCTIVE POLYMERS AND PROCESS OF PRODUCING THE SAME.

3,396,231. STRESS GRADED CABLE TERMINATION.

3,424,130. ENTRY PORT MEMBER FOR DIP CRUCIBLE APPARATUS.

3,461,218. CRYOGENIC A.C. CABLE.

3,466,186. DIP FORMING METHOD.

3,484,280. ATMOSPHERE CONTROL IN DIP-FORMING PROCESS.

3,494,883. POLYOXYMETHYLENE POLYMERS CROSS-LINKED WITH TRIALLYCANURATE AND A PEROXIDE.

3,510,345. APPARATUS AND METHOD FOR AUTOMATICALLY CONTROLLING THE MOLTEN METAL BATH LEVEL IN A METALLURGICAL PROCESS.

3,538,884. CONTINUOUS FORMATION OF INTERMEDIATES.

3,546,014. METHOD FOR MAKING THIN WALL INSULATED WIRE.

3,553,348. POLYMERIC BLENDS FOR INSULATION COMPOSITION.

3,582,534. STRESS CASCADE-GRADED CABLE TERMINATION.

The RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 76 patents.

Inquiries respecting these patents should be addressed to: RCA Corporation, Staff Vice President, Domestic Licensing, 1133 Avenue of the Americas, New York, N.Y., 10036.

3,617,326. METHOD OF BRANDING SILICON PLASTIC SURFACE.

3,617,381. METHOD OF EPITAXIALLY GROWING SINGLE CRYSTAL FILMS OF METAL OXIDES.

3,617,621. COLOR COMPENSATING CIRCUITS.

3,617,622. OSCILLATOR CIRCUITS FOR PROVIDING A VARIABLE AMPLITUDE OUTPUT SIGNAL UNDER CONTROL OF AN INJECTED INPUT SIGNAL.

3,617,821. HIGH-VOLTAGE TRANSISTOR STRUCTURE HAVING UNIFORM THERMAL CHARACTERISTICS.

3,617,823. SELF-SCANNED PHOTOTRANSISTOR ARRAY EMPLOYING COMMON SUBSTRATE.

3,617,889. TIME-FREQUENCY-PHASE IN-BAND CODED COMMUNICATIONS SYSTEM.

3,617,892. FREQUENCY MODULATION SYSTEM FOR SPREADING RADIATED POWER.

3,617,919. CANONICAL ORTHOGONAL FILTER.

3,618,049. HOLOGRAM MEMORY.

3,618,132. FREQUENCY SHIFT OSCILLATOR WHICH AVOIDS THE GENERATION OF TRANSIENTS.

3,618,185. OVAL LOUDSPEAKER BASKET AND METHOD OF MANUFACTURING SAME.

3,618,841. ENDLESS LOOP TAPE CARTRIDGE.

3,619,024. PACKING OF HOLOTAPE.

3,619,025. ELIMINATION OF THE EFFECTS OF SCRATCHES AND TWISTING IN A HOLOGRAPHIC MOTION PICTURE TAPE.

3,619,031. ELECTRO-OPTIC PARITY CHECKER.

3,619,285. METHOD OF MAKING A PATTERNED METAL FILM ARTICLE.

3,619,487. SELECTIVELY OPERATED TINT CORRECTION CIRCUITS.

3,619,488. VIDEO AMPLIFIERS.

3,619,489. SHADOWING SYSTEM FOR COLOR ENCODING CAMERA.

3,619,492. AUTOMATIC FINE TUNING CIRCUITRY.

3,619,509. BROAD SLOPE DETERMINING NETWORK.

3,619,517. LABYRINTH FOR UNIDIRECTIONAL MICROPHONE.

3,619,569. OPTICAL CARD READING APPARATUS.

3,619,585. ERROR CONTROLLED AUTOMATIC RE-INTERROGATION OF MEMORY.

3,619,647. STAIRCASE VOLTAGE GENERATORS.

3,619,665. OPTICALLY SETTABLE FLIP-FLOP.

3,619,666. TRIGGER CIRCUITS HAVING UNIFORM TRIGGERING VOLTAGES.

3,619,689. CATHODE-RAY TUBE WITH ELECTRODE SUPPORTED BY STRAPLIKE SPRINGS.

3,619,707. ASTIGMATISM CORRECTION FOR ELECTRON BEAM DEVICES.

3,619,725. ELECTRICAL FUSE LINK.

3,619,731. MULTIPLE PELLET SEMICONDUCTOR DEVICE.

3,619,733. SEMICONDUCTOR DEVICE WITH MULTILEVEL METALIZATION AND METHOD OF MAKING THE SAME.

3,619,734. ASSEMBLY OF SERIES CONNECTED SEMICONDUCTOR ELEMENTS HAVING GOOD HEAT DISSIPATION.

3,619,811. GAS LASER TUBE MOUNT.

3,620,467. ENDLESS LOOP TAPE CARTRIDGE.

3,620,692. MOUNTING STRUCTURE FOR HIGH-POWER SEMICONDUCTOR DEVICES.

3,620,799. METHOD FOR METALLIZING A CERAMIC BODY.

3,621,226. ANALOG MULTIPLIER IN WHICH ONE INPUT SIGNAL ADJUSTS THE TRANSCONDUCTANCE OF A DIFFERENTIAL AMPLIFIER.

3,621,297. MONOSTABLE MULTIVIBRATOR.

3,621,367. FREQUENCY MULTIPLIER EMPLOYING INPUT AND OUTPUT STRIP TRANSMISSION LINES WITHOUT SPATIALLY COUPLING THEREBETWEEN.

3,621,462. AMPLIFIERS AND OSCILLATORS COMPRISED OF BULK SEMICONDUCTOR NEGATIVE RESISTANCE LOADED SLOW-WAVE STRUCTURE.

3,621,487. SEQUENCER.

3,622,226. LIQUID CRYSTAL CELLS IN A LINEAR ARRAY.

3,622,322. PHOTOGRAPHIC METHOD FOR PRODUCING A METALLIC PATTERN WITH A METAL RESINATE.

3,622,341. ZINC OXIDE AND TITANIUM OXIDE SENSITIZED BY AZO DYES.

3,622,690. ELECTRONIC SCANNER UTILIZING A LASER FOR THE SIMULTANEOUS SCANNING AND REPRODUCING OF IMAGES.

3,622,712. DEVICE EMPLOYING SELENIUM-SEMICONDUCTOR HETEROJUNCTION.

3,622,758. ARTICLE LABELING AND IDENTIFICATION SYSTEM.

3,622,826. PHOSPHOR SCREEN COMPRISING TWO KINDS OF PARTICLES, EACH HAVING PHOSPHOR CORE AND PHOSPHOR COATING.

3,622,903. HIGH-GAIN DIFFERENTIAL AMPLIFIER.

3,622,906. LIGHT-EMITTING DIODE ARRAY.

3,622,913. FREQUENCY MODULATED PHASE-LOCKED OSCILLATOR HAVING LOW- AND HIGH-FREQUENCY RESPONSE.

3,623,020. FIRST-IN FIRST-OUT BUFFER REGISTER.

3,623,117. COLLAPSIBLE STRUCTURE TO SUPPORT ANTENNA ELEMENTS.

3,623,120. MAGNETIC DRUM SYSTEM.

3,623,219. METHOD FOR ISOLATING SEMICONDUCTOR DEVICES FROM A WAFER OF SEMICONDUCTING MATERIAL.

3,623,392. VISUAL DISPLAYS UTILIZING LIQUID CRYSTALS.

3,623,795. ELECTRO-OPTICAL SYSTEM.

3,623,867. PHOTOGRAPHIC METHOD FOR PRODUCING A CATHODE RAY TUBE SCREEN STRUCTURE.

3,623,994. VERY SHORT LUMINESCENT DECAY-TIME PHOSPHOR.

3,624,279. COLOR TELEVISION RECEIVER HUE CONTROL.

3,624,280. TELEVISION AMPLIFIER CIRCUITS.

3,624,286. NOISE CANCELLATION IN VIDEO SIGNAL GENERATING SYSTEMS.

3,624,419. BALANCED OPTICALLY-SETTABLE MEMORY CELL.

3,624,423. CLOCKED SET-RESET FLIP-FLOP.

3,624,425. CAPACITANCE MULTIPLICATION NETWORK.

3,624,428. ELECTRIC SIGNAL PROCESSING CIRCUIT EMPLOYING CAPACITIVELY-SCANNED PHOTOTRANSISTOR ARRAY.

3,624,465. HETEROJUNTION SEMICONDUCTOR TRANSDUCER HAVING A REGION WHICH IS PIEZOELECTRIC.

3,624,490. TWO TERMINAL CURRENT REGULATOR.

3,624,510. THRESHOLD DIGITAL SWITCH CIRCUIT FOR REMOTE CONTROL SYSTEM.

3,624,512. AUTOMATIC FREQUENCY CONTROL SYSTEM.

3,624,554. ULTRA HIGH FREQUENCY OSCILLATOR UTILIZING TRANSMISSION LINE TUNABLE RESONANT CIRCUITS.

3,624,559. PHASE OR FREQUENCY MODULATOR USING PIN DIODES.

3,624,573. BLUE LATERAL MAGNET STRUCTURE.

3,624,634. COLOR DISPLAY.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JANUARY 11, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-04-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	7-20-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	10-21-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-18-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods. Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-30-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	5-10-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	7-27-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	2-01-70
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	3-01-70
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	11-03-70
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	12-03-70
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	1-04-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	12-01-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	12-01-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	2-01-71
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	1-04-71

Expiration of patents: The patents within the range of numbers indicated below expire during January 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

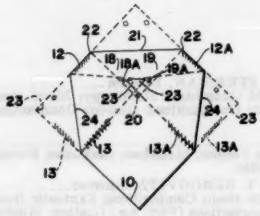
Patents..... Numbers 2,698,434 to 2,700,763, inclusive
Plant Patents..... Numbers 1,339 to 1,344, inclusive

PATENTS

GRANTED FEBRUARY 1, 1972

GENERAL AND MECHANICAL

3,638,239
BLOUSE CONSTRUCTION
Katherine L. Wilcox, Box 834, Lacombe, Alberta, Canada
Filed Apr. 30, 1970, Ser. No. 33,495
Claims priority, application Great Britain, May 6, 1969, 22,969/69
Int. Cl. A41d *1/22*
U.S. Cl. 2—105 **6 Claims**

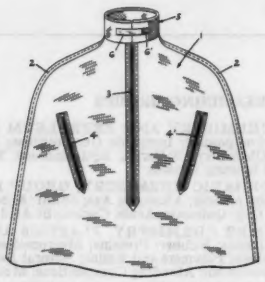


Two squares of material are sewn together along a pair of shoulder seam lines and a pair of side seam lines intermediate the ends of the edges of the material. Pairs of dome fasteners or the like may then be engaged inwardly to form a draped sleeveless blouse.

3,638,240
VENTED GOGGLES
James V. Militello, Buffalo, N.Y., assignor to American Allsafe Company, Inc., Buffalo, N.Y.
Filed Feb. 7, 1968, Ser. No. 703,617
Int. Cl. A61f *9/02*
U.S. Cl. 2—14 N **2 Claims**

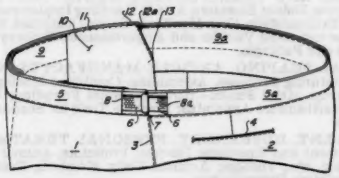
Vented goggles of the type having a frontal lens portion and a molded plastic frame extending about the lens portion and rearwardly to the face of the wearer. The vent structure is entirely of molded plastic comprising an oblong opening in the plastic frame having a surrounding wall extending outwardly from the frame, together with an oblong plastic cap which secures over the wall in sealing engagement with the front portion thereof. The cap has an opening along the lower part of its rear wall whereby venting air may pass through such opening and upwardly over the outwardly extending wall of the frame.

3,638,241
FOUL WEATHER OUTER GARMENT
Kenneth E. Holmes, Holmes Road, Andover, Mass.
Filed May 25, 1970, Ser. No. 40,121
Int. Cl. A41d *3/08*
U.S. Cl. 2—88 **2 Claims**



A foul weather outer garment is provided to be worn over conventional outer garments. It comprises a sacklike body portion without arms, having a split turtle neck pervious to air and moisture, adjustable as desired, the body portion being substantially impervious to air and moisture and open at the bottom to permit the circulation of air through the garment and about the neck portion from which the air and moisture are exhausted to the atmosphere.

3,638,242
BELT-TYPE SIDE POCKET WAIST ADJUSTMENT FOR GARMENTS
Frank Herter, 2817 Cypress Ave., Cleveland, Ohio
Filed Mar. 23, 1970, Ser. No. 21,787
Int. Cl. A41d *1/06*
U.S. Cl. 2—237 **4 Claims**



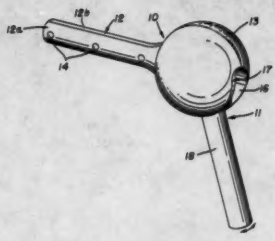
A garment is disclosed which includes a front section having a front waistband and a rear section having a rear waistband. A pocket pouch extends downwardly from a seam at the top of the front waistband. The rear waistband is received in the pocket pouch for sliding movement in the pocket pouch. The seam at the top of the front waistband guides the rear waistband in the pocket pouch to maintain the rear waistband in aligned overlapping relation to the front waistband. Elastic means retains the rear waistband in the pocket pouch and urges the rear waistband against the seam to maintain alignment.

3,638,243

SURGICALLY IMPLANTABLE PROSTHETIC JOINT

William B. Campbell, Jr., Columbus, Ohio; Jack E. Burroughs, Fort Worth, Tex., and Joe K. Cochran, Jr., Columbus, Ohio, assignors to The Ohio State University, Columbus, Ohio

Filed May 4, 1970, Ser. No. 34,173
Int. Cl. A61f 1/24
U.S. Cl. 3—1 2 Claims



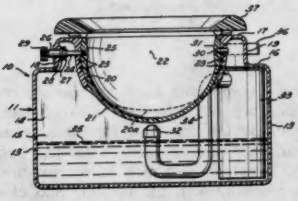
A surgically implantable hinge joint for replacing a damaged or diseased natural hinge joint in the skeletal structure of humans and other animals and composed of relatively rotatable ball- and socket-members each having elongate shank portions for implantation in the proximal end portions of the bones which are severed from the removed natural joint, and which provides for at least limited axial rotation of one of the joint members relative to the other together with relative hinging or pivotal swinging movement of such members in a given plane.

3,638,244

WATER CLOSET

John H. Schmid, and Arthur E. Thomas, both of Erie, Pa., assignors to Zurn Industries, Inc., Erie, Pa.

Filed Apr. 6, 1970, Ser. No. 25,896
Int. Cl. E03d 5/01, 5/016
U.S. Cl. 4—17 22 Claims



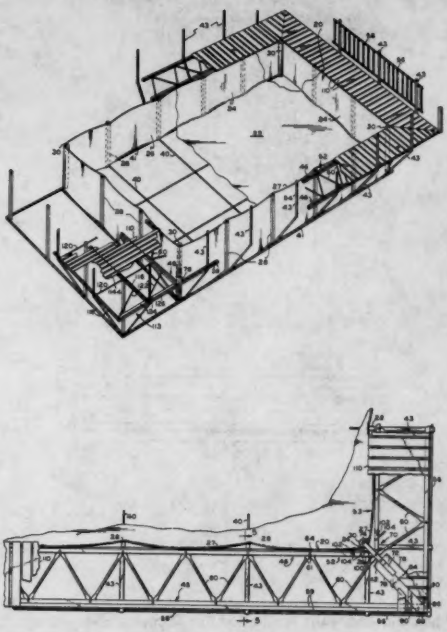
A water closet for collecting and disposing of waste materials is disclosed. The water closet includes a receptacle having a top opening therein. A bowl is mounted within the top opening and the bowl is adapted to be pivoted from a position wherein the interior of the bowl faces upwardly to collect waste to a position wherein the bowl faces downwardly to empty the contents of the bowl into the receptacle. A spray head is located beneath the bowl to direct a flushing solution against the interior of the blow when the bowl is in its inverted position.

3,638,245

TRUSS BEAM SWIMMING POOL

George R. Birkemeier, Portland, Oreg., assignor to Timber Structures, Inc., Portland, Oreg.

Filed Aug. 28, 1969, Ser. No. 853,685
Int. Cl. E04h 3/16, 3/18
U.S. Cl. 4—172.19 12 Claims



A truss-beam swimming pool includes slightly bowed truss beams 52 and 53 secured together at their ends by joints 70 and forming a self-restraining rectangle. The beams take lateral thrust from tops of posts 28, which support continuous sidewalls 26 which support sidewalls 24 of a plastic pool member 20. The joints 70 rest on corner posts 30 and tie together inner chords 46 and end webs 60 of the beam. The joints also support the inner ends of corner beam members 78. The beams are supported by posts 28, 30 and 43 and have duckboards nailed to the chords thereof to form a deck. The lower ends of the posts are secured together by tierods and by bottom frame members 41.

3,638,246

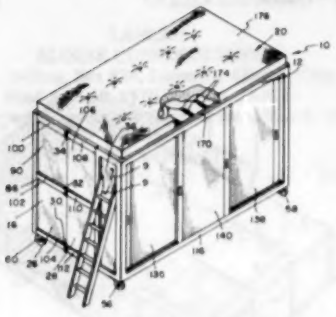
COLLAPSIBLE COMBINATION BED AND CLOSET

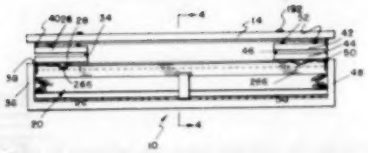
William A. Jewell, 3747 Cambridge, Kansas City, Kans.

Filed Mar. 4, 1970, Ser. No. 16,392
Int. Cl. A47c 13/38, 17/40
U.S. Cl. 5—2 R 6 Claims

A collapsible combination bed and closet comprising upstanding sidewalls connected by inwardly foldable end walls. A sleeping platform in the nature of a padded spring support is pivoted to the top of one of the sidewalls so as to be swung to a storage condition between the sidewalls that does not interfere with inward folding of the end walls. Shelves and clothes rod are detachably mounted to extend between the end walls, and a closable opening is provided in one of the sidewalls for access to the shelves and rod. A collapsible bot-

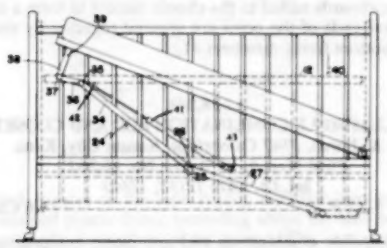
tom wall including a fixed section is provided and there is sufficient space above and on the fixed bottom wall section





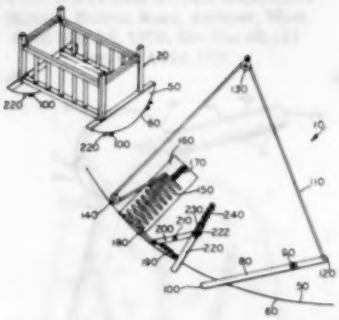
(when the end walls are folded) to accommodate storage of the shelves, rod and a ladder.

3,638,247
BABY'S CRIB
Francis Alan Kennedy, Miami, Manitoba, Canada
Filed Apr. 29, 1970, Ser. No. 32,856
Int. Cl. A61g *7/10*; **A47d** *7/03, 9/00*
U.S. Cl. 5—11 **3 Claims**



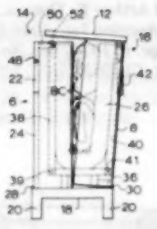
When one side of the crib is pushed down, linkage raises one end of the base frame and the mattress so that the mattress is inclined with the head of the baby raised almost level with the top of the lowered side. As the side is moved up to the normal closed position, the mattress lowers to the original horizontal position.

3,638,248
APPARATUS FOR PRODUCING A ROCKING MOTION
Jack Silverglate, 6 Roanoke St., Woodbridge, N.J.
Filed Jan. 14, 1971, Ser. No. 106,418
Int. Cl. A47d *9/02, 13/10*; **A47c** *3/02*
U.S. Cl. 5—105 **5 Claims**



The apparatus comprises a plurality of rods and levers and springs interconnected by a cable so that a crib or the like, moved by hand initially, causes the apparatus to apply a force to the surface on which the apparatus is mounted to cause the rocking motion to continue.

3,638,249
CABINET BED
Stylianos G. Katsigarakis, 214 Vaughan Road Apt. 0101, Toronto 347, Ontario, Canada
Filed Jan. 7, 1970, Ser. No. 1,138
Int. Cl. A47c *17/60*
U.S. Cl. 5—159 **11 Claims**

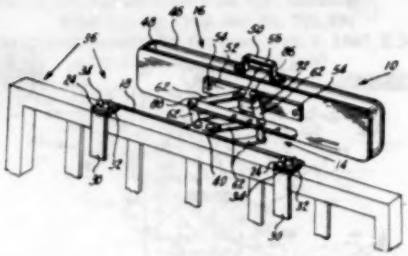


A cabinet bed comprising a cabinet having a box mounted on a base; said box being formed of two halves which are respectively hinged to the base for opening and closing. When closed, the box contains a folding bed which is comovably coupled to both box halves for unfolding and folding coincidentally with the opening and closing of the box halves; the bed in its unfolded state being supported at an optimal level.

3,638,250
FOOTREST STRUCTURE FOR BEDS
Charles B. Johnson, 1600 E. University, Des Moines, Iowa
Filed Apr. 3, 1970, Ser. No. 25,326
Int. Cl. A47c *21/00*
U.S. Cl. 5—327 **7 Claims**

A footrest structure for beds of ordinary construction to be provided as a brace or support for the feet of the bed occu-

pant, particularly when he is in a sitting or partially sitting position. This footrest includes an adjustable mounting bracket which is attachable to footboards of varying thicknesses. A footrest cushion is attached to the mounting



bracket by a scissor-type jack mechanism so that the cushion can be moved longitudinally of the bed to accommodate persons of different heights. The adjustment mechanism is provided with a suitable locking device to hold it immovable in any adjusted position.

3,638,251

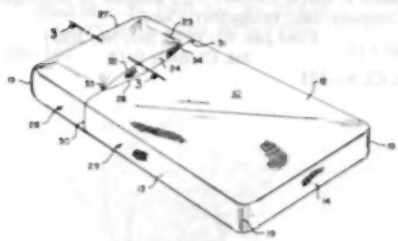
COMBINATION BEDSHEET AND PILLOWCASE

Sidney Matthew Weiss, c/o The Griswold-Eshleman Co. 625 Madison Ave., New York, N.Y.

Filed Jan. 2, 1970, Ser. No. 190

Int. Cl. A47g *9/00*

U.S. Cl. 5—334 C **4 Claims**



The disclosure relates to a combination bedsheet and pillowcase. A fitted-contour bedsheet is provided adjacent its head end with a transverse gore, either integral or as a separate panel, providing a pocket bulge at the head portion of the sheet. One or more pillows, depending on the configuration of the sheet, may be received between the mattress and the bedsheet within this pocket bulge, and, in one advantageous form of the invention, the front of the pocket tucks under the front edge of the pillow, providing the appearance of a conventional separate sheet and pillow arrangement. The fitted-contour sheet is self-holding on the mattress, so that the pillow or pillows are totally enclosed and secured in place. To particular advantage, the new combination bedsheet is constructed of knitted fabric, mechanically preshrunk in the length direction; in this way, a "no iron" sheet may be constructed using ordinary knitted cotton fabrics, which are to be preferred over synthetic or resin-fixed fabrics for the same purposes.

3,638,252

FITTED BEDSHEET

Carlton L. Palenske, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 22, 1969, Ser. No. 886,830

Int. Cl. A47g *9/00*

U.S. Cl. 5—334 **4 Claims**

A contoured bedsheet readily adaptable to folding and compact packaging which can be directly applied to a mattress without turning it inside-out prior to application. The bedsheet comprising a central rectangular portion, two side panels each of which has a common edge with the central portion, at least one end panel having a common edge with the central portion, and at least two corner sections each of which has a common edge with both a side panel and an end panel. In forming the sheet, the corner sections are inwardly folded and, for each section, the common edge between the section and the end panel is secured to the side panel along a line which extends from the intersection of the common edges of the corner section toward the edge of the side panel at an angle which is greater than 90° and less than 120° from the common edge between the corner section and the end panel.

3,638,253

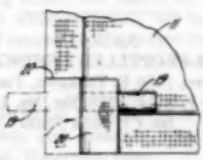
DEVICE FOR FILLING AND SEALING FLEXIBLE CONTAINERS

Paul R. Stumpf, Menasha, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Sept. 11, 1969, Ser. No. 857,041

Int. Cl. A47c *27/08*

U.S. Cl. 5—337 **9 Claims**



There is disclosed a tubular valve used to fill and seal inexpensive, disposable, inflatable containers such as pillows and the like. Sealing of this valve is accomplished by folding it to collapse its walls.

3,638,254

SPRING

Vernon A. Falkenau, Mishawaka, Ind., assignor to Uniroyal, Inc., New York, N.Y.

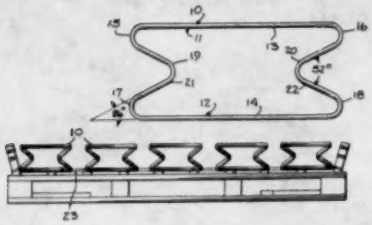
Filed May 15, 1970, Ser. No. 37,755

Int. Cl. A47c *23/04*, *25/00*

U.S. Cl. 5—351 **6 Claims**

A plastic spring having two longitudinal sides joined by transverse sides having curved portions. The upper and lower

halves of the spring are symmetrical. Upper curved portions are disposed directly over lower curved portions to cause vertical deflection of the spring without horizontal roll in



response to load. A mattress foundation utilizing such springs has border springs so mounted as to tend to slant outwardly but held in a vertical position by the foundation cover, thereby keeping the cover taut.

3,638,255

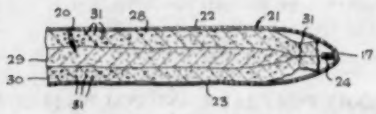
SEAT CUSHION OR PILLOW

Eugene L. Sterrett, 2835 Letricia Drive, Hacienda Heights, Calif.

Filed Oct. 2, 1969, Ser. No. 863,245

Int. Cl. A47g *9/00*; **A47c** *7/74*

U.S. Cl. 5—337 **10 Claims**



A seat cushion or pillow including an outer porous covering containing a mass of cushioning material, and with the pillow or cushion being formed at least partially of, or carrying, an odor adsorbent substance, preferably activated charcoal.

3,638,256

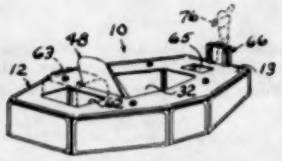
MOTOR-PROPELLED FISHING FLOAT

Hubert L. McIntyre, 1406 E. Tonkawa, Tonkawa, Okla.

Filed Feb. 24, 1970, Ser. No. 13,399

Int. Cl. B63b *35/00*

U.S. Cl. 9—1 R **5 Claims**



In a fishing float a horizontally disposed open framework reinforced polygonal-shaped buoyant body is provided with a seat-equipped central opening. An upstanding transom, at one end of the body, supports an outboard motor. An upwardly open recess, in the other end portion of the body, receives a battery for providing electrical energy to the motor.

3,638,257

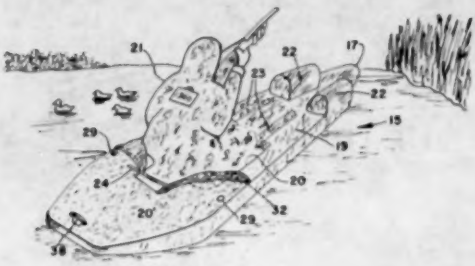
HUNTING BOAT

Carl J. Ernst, P.O. Box 221, Webb, Miss.

Filed July 16, 1970, Ser. No. 55,315

Int. Cl. B63b *35/00*

U.S. Cl. 9—5 **10 Claims**



A low-profile hull without substantial vertical surfaces conforms substantially to the body of an occupant in a reclining position and can also accommodate the occupant in a sitting position. The hull has a convexo-concave bottom which slopes upwardly at the stern and a convexo-concave deck which is coextensive with the bottom and is provided amidships with an opening for the occupant. The deck also has blisters for the occupant's feet, and grooves serving as gun rests. Fillers of buoyant material are provided in the bow, stern and amidships, and the stern filler is recessed to form storage compartments. The hull is covered with camouflage material permanently attached as by gluing to all above water surfaces of the hull.

3,638,258

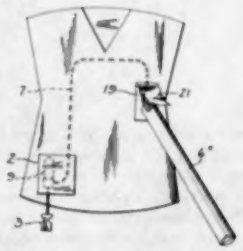
RESCUE LIGHT FOR A LIFE SUPPORT SYSTEM

Richard I. Black, Closter, N.J., assignor to Remington Arms Company, Inc., Bridgeport, Conn.

Filed Jan. 12, 1970, Ser. No. 2,201

Int. Cl. B63c *9/18*

U.S. Cl. 9—321 **1 Claim**



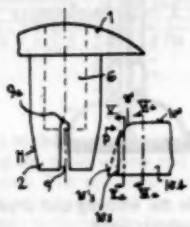
The combination of a rescue light attached to a life support system, such as a life vest, life raft, or life preserver. The lighting device consists of a transparent envelope containing a chemiluminescent element which is activated by the admission of a gas. The gas serves the additional purpose of inflating said envelope to form a substantially rigid wand of light. Means may be provided to quickly detach the wand from the support system.

3,638,259

METHOD FOR MAKING BLIND RIVETS

Carl B. H. Eibes, deceased, late of Schalttenbach, Germany; Ursula Eibes geb. Waschau; Christian Eibes, both of Schnaittenbach; Carl-Herwig Eibes, Berlin-Schoneberg, and Maria-Theresia Wagner geb. Eibes, all heirs, Amberg, all of Germany, assignors to Kerb-Konus-Gesellschaft Dr. Carl Eibes & Co., Schnaittenbach am opf., Germany

Filed Jan. 29, 1968, Ser. No. 701,490
Claims priority, application Germany, Feb. 1, 1967, E 33312
Int. Cl. B21k *1/58;* B23g *9/00*
U.S. Cl. 10—27 4 Claims



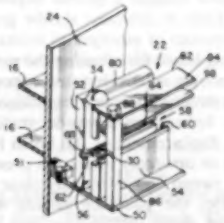
The disclosure relates to blind rivets and to an improved method of making such rivets. Symmetrically disposed slots are formed in the plain end of the rivet by means of chisel-type or edge-cutting tools so as to form several segments or lugs which, in use, may be spread apart by a spreading pin or the like to secure two or more members together.

3,638,260

FEEDER FOR SCREW BLANKS AND SERRATED WASHERS

John B. Brown, and Raymond L. Alexander, both of Indianapolis, Ind., assignors to Moorfeed Corporation, Indianapolis, Ind.

Filed Mar. 25, 1970, Ser. No. 22,635
Int. Cl. B21k *27/00;* B23p *19/08*
U.S. Cl. 10—162 11 Claims



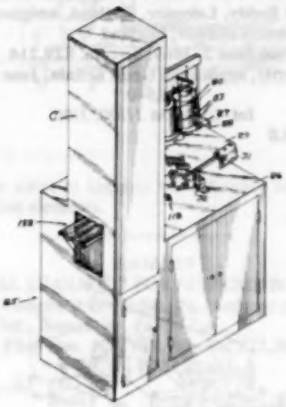
Vibratory track means for serially feeding washers, the track means including means providing an upwardly facing first ledge portion for supporting peripheral edge portions of the washers, an upwardly extending first wall portion extending along and bounding the first ledge portion, and an overhanging, downwardly facing portion extending outwardly from the first wall portion by an amount preferably not substantially greater than the cross-sectional width of the first ledge portion. The track means also includes means providing a second upwardly facing ledge portion for supporting the diametrically opposite peripheral edge portions of the washers and an upwardly extending second wall portion extending along and bounding the second ledge portion and facing the said first wall portion, the track means being devoid of any surface overhanging this second ledge portion.

3,638,261

APPARATUS FOR APPLYING INK OR OTHER LIQUIDS TO SOLES OR OTHER FREE FOAM ARTICLES

James Johnson, Plaistow, N.H., and Richard S. Ordway, Haverhill, Mass., assignors to Circle Machine Co., Inc., Haverhill, Mass.

Filed June 1, 1970, Ser. No. 42,270
Int. Cl. A43d
U.S. Cl. 12—1 A 30 Claims



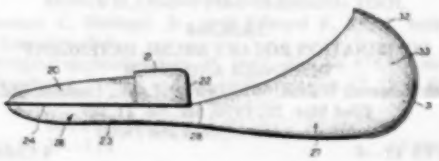
Apparatus is disclosed for applying liquids, inks and adhesives, for examples, to or otherwise treating the margins of shoe soles or other free form articles. The apparatus has first means to support an article in an elevated position and adapted to be opened to enable an article to be introduced or removed and, when closed, operable to turn the article to a desired extent and to apply a liquid to or otherwise treat its margins. Conveyor means, desirably including a dryer when the treatment is with a liquid, includes a transfer device at its infeed end operable to remove a treated article from the first means. Control means actuated when an article is introduced into the supporting means first closes the supporting means and then opens it when an article has been turned to the desired extent and operates the conveyor means.

3,638,262

METHOD OF MAKING SLIPPERS

Winalee G. Mitchell, and James G. Mitchell, both of 205 Farnsworth Road, Waterville, Ohio

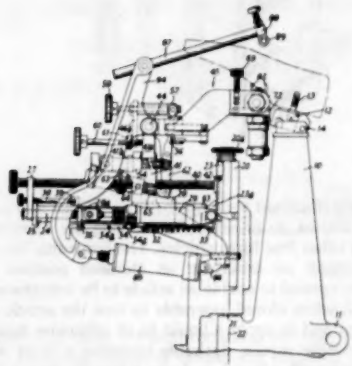
Original application Apr. 10, 1968, Ser. No. 720,016, now Patent No. 3,523,378. Divided and this application May 1, 1970, Ser. No. 43,660
Int. Cl. A43d *9/00*
U.S. Cl. 12—142 MC 5 Claims



Slippers having an upper joined to a lower blank of elastomeric sheeting material which increases in width but

the marginal edges thereof taper inwardly and upwardly toward the heel where the left and right sides are joined in a heel seam which is at least partly forwardly inclined. Also, a method of making such slippers including the steps of simultaneously cutting and bonding an upper with a lower blank having lateral edges which, in the rearward direction are from about parallel to divergent, folding the lower blank on about its longitudinal axis and bonding the folded left and right sides together along a heel seam which is at least partly forwardly inclined.

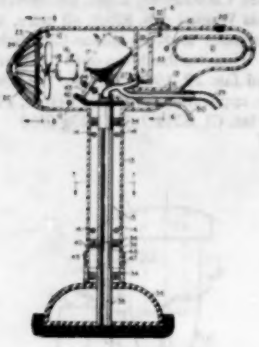
3,638,263
SHOE UPPER DRAFTING APPARATUS
Harold Albert Boddy, Leicester, England, assignor to Ralphs Unified Limited, Leicester, England
Filed June 2, 1969, Ser. No. 829,214
Claims priority, application Great Britain, June 4, 1968, 26,540
Int. Cl. A43d *21/00, 3/00*
U.S. Cl. 12—8.8 **12 Claims**



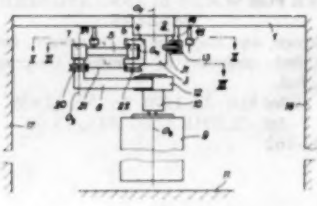
Apparatus for applying a drafting pull to a shoe upper on a last-carried bottom uppermost on a support which enables the last to pivot heightwise of the last about its heel end portion comprises a pair of pincers for gripping opposite sides of the forepart of the upper. The pincers can be swung towards and away from each other. The pincers are mounted on a carriage for movement lengthwise of the last, relative to the last and a member is provided for pressing on the bottom of the last to cause the last to pivot about the support, so that the upper can be drafted lengthwise of the last and across the last.

3,638,264
COMBINATION ROTARY BRUSH, DETERGENT DISPENSER AND DRIER
Frank Roosevelt Walton, 7939 Dellwood Ave., Lanham, Md.
Filed Mar. 20, 1970, Ser. No. 21,389
Int. Cl. A46b *13/04*; **F26b** *19/00*
U.S. Cl. 15—4 **4 Claims**

A portable implement combining therein a powered brush element, a detergent chamber capable of releasing a brushing agent and directing the same to a point of discharge adjacent the brush element together with a drying means, all operative parts for the aforesaid assembly being wholly contained within a single casing, thus enabling the implement to be efficiently employed in the washing and drying of objects to be cleaned and subsequently dried.



3,638,265
VEHICLE-SCRUBBING DEVICE
Heinrich Fuhring, Augsburg; Richard Fleschhut, Goggingen, and Hans Wolter, Augsburg, all of Germany, assignors to Bowe, Bohler & Weber, Augsburg, Germany
Filed Dec. 1, 1969, Ser. No. 881,155
Claims priority, application Germany, Dec. 3, 1968, P 18 12 324.5
U.S. Cl. 15—21 D **10 Claims**

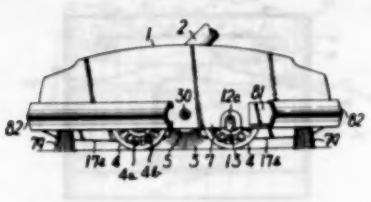


A rotary scrubbing brush for cleaning the surface of an automotive vehicle moving relatively to a supporting structure is mounted on that structure through a guidance system, such as an articulated linkage or a guide track, enabling a generally diagonal displacement of the brush from a starting position outwardly or upwardly under the pressure of an oncoming vehicle to sweep and eventually clear the front surface of that vehicle; the guidance system is then swung, through an angle of about 90° or less, into a substantially symmetrical angular position in which a restoring force acting upon the brush holder causes a return sweep along the rear surface of the vehicle.

3,638,266
ELASTIC WHEEL CONSTRUCTION FOR CARPET SWEEPER
Hiroshi Fukuba, 2-320-82 Matsugaaka, Nagareyama City, Japan
Original application May 12, 1969, Ser. No. 823,570. Divided and this application Mar. 4, 1971, Ser. No. 121,012
Int. Cl. A47l *11/32*
U.S. Cl. 15—41 R **1 Claim**

A carpet sweeper to be moved back and forth by operating a handle is provided with a rotary cleaning brush adapted to

be moved in contact with the floor by means of four supporting spoked drive wheels each integrally formed of flexible rubber and mounted on a sweeper body. The frame cover of the sweeper body is of a double-wall structure made of a thin, lightweight synthetic resin plate. The sweeper body further comprises dust receptacles covering the under portion and positioned to the front and rear of the rotary brush, means for elevating the drive wheels and comb members to clean the rotary brush. The operating members for opening or closing the dust receptacles and for elevating means are disposed on the upper surface of the frame cover.



3,638,267

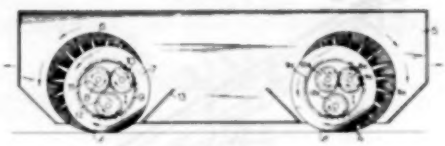
FLOOR TREATING APPARATUS

Johannes Liebscher, Nassau/Lahn, Germany, assignor to Gunter Leifheit K.G., Nassau/Lahn, Germany

Filed June 13, 1969, Ser. No. 832,950

Int. Cl. A47l *11/33*

U.S. Cl. 15—41 R **11 Claims**



A carpet sweeper having a support which mounts several ground-engaging wheels rotatable in clockwise and counterclockwise directions in response to movement of the support in opposite directions. Each wheel drives a rotary brush by way of one or two spur gears in such a way that the brush rotates in a single direction irrespective of the direction of rotation of the respective wheel.

3,638,268

GLASS WASHER AND POLISHER

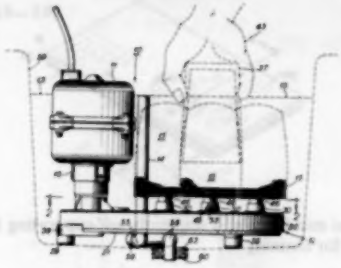
Gilbert N. Van Horn, Pompano Beach, Fla., assignor to Bar Maid Corporation, Pompano Beach, Fla.

Filed Jan. 26, 1970, Ser. No. 5,764

Int. Cl. A47l *15/38*; **B67c** *1/08*

U.S. Cl. 15—76 **7 Claims**

A glass washer and polisher is shown having a base comprising a top plate and a bottom plate with premolded bearing sections therein. A plurality of gear and brush holders which are also molded are mounted within the bearing portions of the top plate and bottom plate of the base. A submersible drive motor is oriented with its axis perpendicular to that of the base and through its drive gear and an idler drives the gear and brush holders. An overflow drain is provided through the base to accommodate the smaller sink sizes customarily found in bars, kitchens, and chemical research facilities which may be quite small. The motor is provided on a short shaft which renders the unit considerably more stable in operation, and offers the twofold advantage of cooling the motor to increase its life expectancy and at the same time warming the water to improve the efficiency of washing and polishing glass elements.



3,638,269

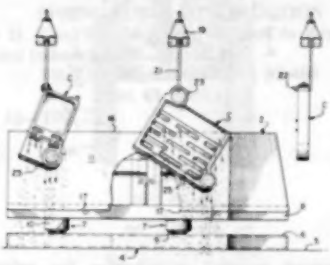
VERTICAL SHAKEOUT FOR SUSPENDED CASTINGS

W. Wayne Campbell, Columbia, Pa., assignor to Peerless Industries, Inc., Boyertown, Pa.

Filed Nov. 17, 1969, Ser. No. 877,392

Int. Cl. B22d *43/00*

U.S. Cl. 15—94 **10 Claims**



An article shaking apparatus includes a plate across the face of which castings are moved longitudinally in a suspended manner. The plate is inclined from the vertical in a direction transverse to the casting travel and includes means imparting vibration thereto.

3,638,270

MONOFILAMENT PILE CLEANING TOOL

Norman C. Schlegel, Jr., and Edward F. Engel, both of Rochester, N.Y.

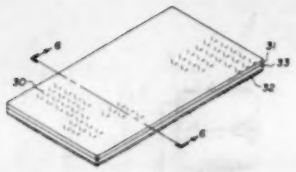
Original application Sept. 25, 1967, Ser. No. 674,078, now abandoned. Divided and this application Oct. 22, 1969, Ser. No. 871,445

Int. Cl. A46b *3/00*; **A47l** *13/12*; **D03d** *27/00*

U.S. Cl. 15—114 **12 Claims**

A cleaning tool is formed with a base, a woven backing fabric secured to the base, and a monofilament of resilient resin woven into the backing fabric so that lengths of the monofilament turn away from the plane of the backing fabric

and extend outward from the backing fabric at a predetermined uniform angles to form a sparse pile of bristles stiff



enough to stand free and resiliently self-supporting in a regular array for cleaning.

3,638,271

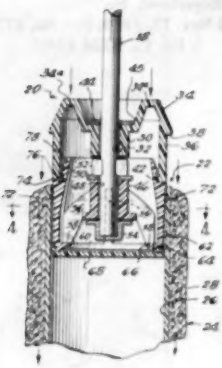
MANDREL CONSTRUCTION FOR PAINT ROLLER

John A. Pharris, Milwaukee, Wis., and Giacinto C. D'Ercoli, Park Forest, Ill., assignors to EZ Paintr Corporation

Filed Jan. 29, 1970, Ser. No. 6,671

Int. Cl. B05c *1/08*; **B44d** *3/28*

U.S. Cl. 15—230.11 **7 Claims**



An improved mandrel construction for paint rollers characterized by the provision of a laterally movable inboard mandrel and a fixed outboard mandrel with the outboard mandrel having generally yieldable fingers normally engaging the interior of a replacement roller cover telescoped thereover. Mating locking surfaces are provided on the inboard and outboard mandrels so that when the two are brought together by relative axial movement and the locking surfaces thereof interengage, the fingers on the outboard mandrel are contracted to permit the roller cover to relatively freely fall therefrom.

3,638,272

DEVICE FOR CLAMPING OF BUFFING AND POLISHING CLOTHS

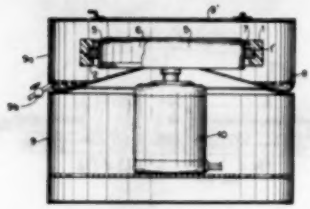
Horst Poleska, and Horst Fleischhauer, both of Rathenow, Germany, assignors to VEB Rathenower Optische Werke, Rathenow, Germany

Filed July 8, 1969, Ser. No. 839,862

Int. Cl. B05c *1/00*

U.S. Cl. 15—230.19 **11 Claims**

A device for clamping or securing buffing and polishing cloths, such as used on the disks of rotary and vibratory buffing and polishing machines, comprising an outer accommodating member and at least one inner clamping member, the former being made of a material which is stable in shape, such as plastics, while the latter is preferably made of wood which is adapted to swell on effect of a polishing or abrading



suspension used in the machine. The outer member has a groove for receiving part of the inner member or members. The members of the clamping device may be circular or rectangular; up to four inner member parts are suggested, particularly in the rectangular embodiment.

3,638,273

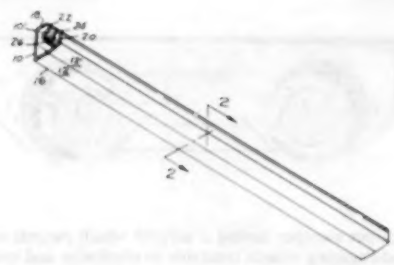
STRIKEOFF ROD

William S. Haivala, 1716 N. Gabin, Wichita, Kans.

Filed May 8, 1970, Ser. No. 35,631

Int. Cl. E01c *10/12*

U.S. Cl. 15—235.4 **2 Claims**



A strikeoff rod comprising an elongated hollow member having two walls intersecting generally at right angles to each other. Each of said walls has a beveled portion sloping inwardly starting on a line parallel to but spaced from the intersection of said walls. The extremities of said walls are remote from said intersection, and are connected by an undulant wall.

3,638,274

WINDOW WIPER AND SCRAPER BLADE

Alfred Farver, 1106 Haven St., Mount Morris, Mich.

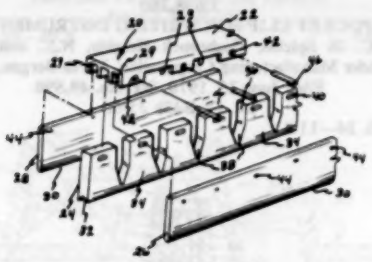
Filed June 12, 1970, Ser. No. 45,802

Int. Cl. B60s *1/02*; **A47l** *1/00*

U.S. Cl. 15—250.41 **17 Claims**

A combination wiper and scraper blade for cleaning curved and/or straight window surfaces comprising a pair of elongated resilient members, such as rubber blades, having parallel wiping edges extending lengthwise thereof with a plastic member disposed therebetween and having a wiping edge parallel to the wiping edges of the resilient members. The plastic member is so constructed that it is uniformly reversibly flexible throughout its lengthwise wiping edge in a plane generally perpendicular to the window surface to be

wiped such that the wiping edge will conform to the contour of the window surface while being relatively inflexible in a plane which is generally at right angles thereto. In a second



embodiment, means are provided for retracting and extending the plastic member to selectively engage and disengage the window surface.

3,638,275

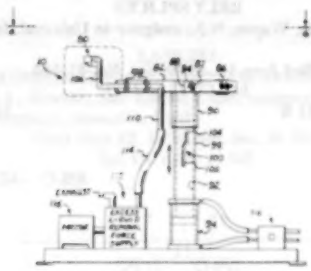
METHODS AND APPARATUS FOR THE MANUFACTURE OF COLOR CATHODE-RAY TUBE SCREENS

John F. Larson, Seneca Falls, N.Y., and Walter A. Polashenski, Roanoke, Va., assignors to Sylvania Electric Products Inc.

Original application Apr. 22, 1968, Ser. No. 723,098. Divided and this application Sept. 24, 1970, Ser. No. 75,170

Int. Cl. A47l 7/00

U.S. Cl. 15—304 **5 Claims**



Methods for drying the upstanding walls of a cathode-ray tube faceplate, particularly around the area of the mask supporting studs are disclosed. The methods utilize an accurately controlled and automatically positionable head for removing excess liquid from the walls and stud area after a processing step. The liquid may be that remaining from either a prerinse in which case either forced air or a vacuum system may be utilized for the liquid removal; or after a developing step in the actual screen formation when a vacuum principle along is utilized for drying the wall area. The described apparatus for carrying out the method comprises a free-floating, self-orienting head which is pivoted to provide arcuate movement in a given substantially vertical plane, and reciprocatable shaft means connected to the free-floating head for indexing the head in a substantially perpendicular direction. Cam means associated with the reciprocatable movement causes engagement and disengagement of the head with the faceplate in accordance with the direction of movement thereof. The cam means causes the head to pivot in a substantially horizontal plane to bring the head into engagement with the faceplate wall.

3,638,276

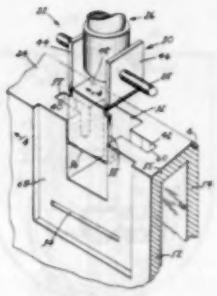
HINGE ASSEMBLY

Woodson H. Vance, Hartsville, Tenn., assignor to U.S. Industries, Inc., New York, N.Y.

Filed Oct. 20, 1969, Ser. No. 867,625

Int. Cl. E05d 7/12

U.S. Cl. 16—149 **8 Claims**



A metal hinge is mounted on a plastic base of a carrying case or the like for supporting an instrument or machine (e.g. a sewing machine) for pivotal movement relative to the base. The hinge comprises a pivot support member carrying a pivot pin on which the instrument or machine is pivotally mounted. The pivot support member is received and secured in place in a suitable channel in the base member and the pivot pin is secured in suitable slots in the base member disposed adjacent to the aforementioned channel.

3,638,277

SPRING HINGE CONSTRUCTION

William H. Coe, Rockford, Ill., assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.

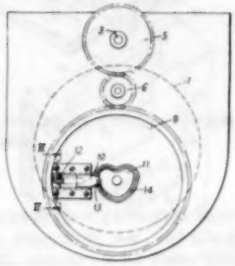
Filed May 7, 1970, Ser. No. 35,460

Int. Cl. E05f 1/12

U.S. Cl. 16—190 **3 Claims**

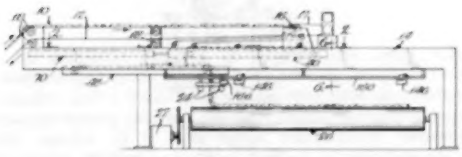
A spring hinge construction for an overlay door for a metal cabinet or other enclosure where the hinge provides the door with a positive closed position and a positive holding 90° open position, with the hinge having a toggle with an over-center position for both the 90° open and the closed positions. The hinge includes an L-shaped cabinet wing and a channel-shaped door wing joined at a pivotal axis, an elongated toggle having one end adapted to project through a wall of the door wing during opening or closing movement and an enlarged opposite end engaging the cabinet wing adjacent the pivot axis. A compression spring encompasses the toggle with one end engaging the enlarged end of the toggle and the opposite end abutting the above-mentioned wall of the door wing.

3,638,278
COILING TEXTILE STRANDS
Arne Johnels, Boras, Sweden, assignor to I.W.S. Nominee Company Limited, London, England
Filed June 5, 1969, Ser. No. 830,608
Claims priority, application Great Britain, June 7, 1968, 27,199/68
Int. Cl. B65h *54/80*
U.S. Cl. 19—159 4 Claims



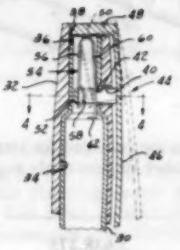
Strands of textile fibers, such as slivers, are coiled in cans at controlled density and more especially at even density throughout, by employing a guide eye which does not merely rotate above the can mouth but has in addition a radially reciprocating component of motion. The coiling device achieves this motion by means of a radially movable slide on a rotary guide member, the slide carrying the guide eye and being actuated by a cam and follower mechanism. The shape of the cam determines the packing density in different portions of the can.

3,638,279
CROSS LAPPER
Harrison G. Swados, Snyder, N.Y., assignor to MSL Industries, Inc.
Filed Oct. 20, 1970, Ser. No. 82,438
Int. Cl. D04h *11/00*
U.S. Cl. 19—163 10 Claims



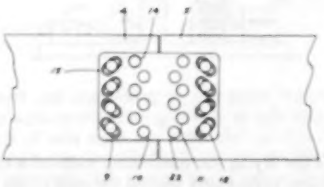
A cross lapper for making a multilayer fibrous mat and including a frame, first and second endless driven conveyors respectively carried by reciprocating supports which are moved between extreme positions on the frame by a fluid ram having its cylinder connected to the frame and its piston rod connected to one of the supports. A fixed rack is carried by the frame and a second rack is carried by one of the supports with a pinion engaging the respective racks and has its axis aligned with the axis of a fluid ram. The means for supplying pressure fluid to opposite ends of the cylinder is in the form of a fluid circuit having a fluid-actuated control device interposed between a pressure fluid source and the cylinder with first and second flow paths between the source and opposite ends of the control device, each of the flow paths having a control valve therein. The control valves are positioned to define extreme positions for the supports and are actuated when the supports reach the extreme positions to reverse the position of the control device.

3,638,280
POCKET CLIP FOR WRITING INSTRUMENT
Giro C. Di Spirito, Hasbrouck Heights, N.J., assignor to Kreisler Manufacturing Corporation, North Bergen, N.J.
Filed June 25, 1970, Ser. No. 49,590
Int. Cl. B43k *25/00*
U.S. Cl. 24—11 S 1 Claim



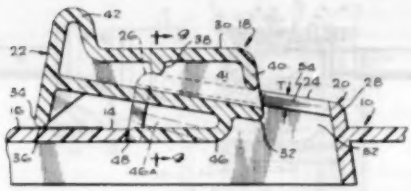
A cap and pocket clip assembly for a writing instrument in which the clip body has an offset located over the end of the cap and a bracket which extends through the cap wall and into the bore of the cap to receive a retaining spring thus to mount the clip for limited pivotal movement of the clip body away from the cap against the action of the spring.

3,638,281
BELT SPLICES
Edgar Francois, Wayne, N.J., assignor to Uniroyal, Inc., New York, N.Y.
Filed June 18, 1970, Ser. No. 47,444
Int. Cl. F16g *3/00*
U.S. Cl. 24—31 B 13 Claims



The invention disclosed is a splice for connecting the ends of conveyor belting and the like formed from at least two relatively rigid fasteners. Each fastener is attached to at least one of the belt ends to be spliced by rivets through the fastener and the belt end. The rivets are arranged in two or more rows. The first row of rivets is mounted in holes in the fastener of such a shape as to allow substantially no relative movement between the fastener, the belt and the rivets passing therethrough. At least one other row of rivets is positioned further from the end of the belt than the first row and is mounted through the fastener in elongated slots inclined at an angle to the longitudinal centerline of the belt so that longitudinal movement between the rivets and the fastener in a direction along the belt is allowed concurrently with the transfer of load between the belt and the fastener.

3,638,282
PAPER HOLDDOWN CLIP
Ake L. Larsson, Redondo Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 13, 1971, Ser. No. 106,072
Int. Cl. B42f *1/00*
U.S. Cl. 24—67.3 7 Claims

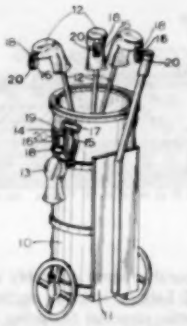


An economical drawing board including a sheet-holding frame with brackets formed thereon, and a pair of clamps for sliding along the brackets to hold down a sheet of paper against the frame. Each bracket has an inclined guide wall, and each clamp has a pair of runners for moving along the guide wall and a paper-engaging portion depending from one end of the runners to engage and hold down a sheet of paper. In order to prevent removal and loss of the clamps, the frame has a slot below each guide wall, and one runner has an elongated retainer member that abuts an end wall of the slot when the clamp is slid in a direction to remove it from the bracket.

3,638,283
INTERCONNECTING MEMBER FOR TENSION LOADS
Anthony L. Moretti, San Rafael, Calif., assignor to E. D. Bullard Company, Sausalito, Calif.
Filed May 12, 1970, Ser. No. 36,524
Int. Cl. A43c *11/08*
U.S. Cl. 24—73 HR 3 Claims

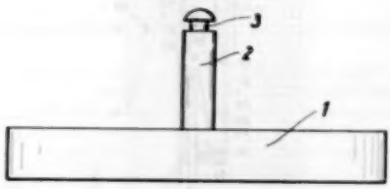
An interconnecting member having a figure-8 configuration by which two loops or eyes are formed. Two S-shaped bodies constitute the principal parts of the member and are pivotally connected so that the loops or eyes can be opened for access to the loops. The pivotal connection is formed by a keyed pin that is spring biased to a position to lock the two members into a figure-8 shape The pin is axially slidable to permit the loop to be opened and is provided with a locking device that prevents inadvertent sliding movement.

3,638,284
GOLF CLUB HEAD COVER TEMPORARY RETAINING DEVICE
Robert H. Baker, 3612 Pallos Verdas, Dallas, Tex.
Filed Oct. 15, 1969, Ser. No. 866,573
Int. Cl. A44b *21/00*
U.S. Cl. 24—73 CF 8 Claims



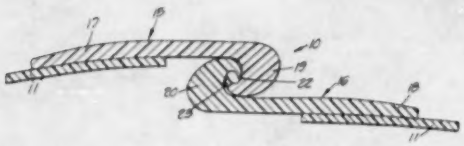
A convenience holding device on a golf bag for temporarily holding removed golf club head covers as the clubs are being used.

3,638,285
TWO-PART LOCK BUTTON
Jose Humberto Sanchez Giraldez, Am Rathenaupark 3, D-2000, Hamburg, Germany
Filed Apr. 8, 1970, Ser. No. 26,577
Claims priority, application Germany, Aug. 21, 1969, P 19 42 535.5; Mar. 3, 1970, P 20 09 760.3; Jan. 24, 1970, P 20 03 164.5
Int. Cl. A44b *1/38, 17/00*
U.S. Cl. 24—108 7 Claims



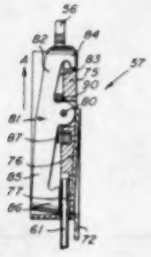
A two-part lock button consists of a male and a female button half and the male part comprises a locking bolt member which is provided with one or several locking grooves and can be inserted into an opening in the female part. The female button half comprises one pair or several pairs of retaining discs which upon insertion of the male button half into the female button half will come into engagement with the one or several locking grooves of the male part thus firmly locking together these two parts. Release of the button halves can be effected by means of a mechanical or magnetic key.

3,638,286
SELF-LOCKING SEPARABLE SEAM ASSEMBLY
Frank D. Eichberg, Scottsdale, Ariz., assignor to Walter A. Plummer, Sherman Oaks, Calif.
Filed Apr. 30, 1970, Ser. No. 33,368
Int. Cl. A44b *17/00, 19/14*
U.S. Cl. 24—201 **6 Claims**



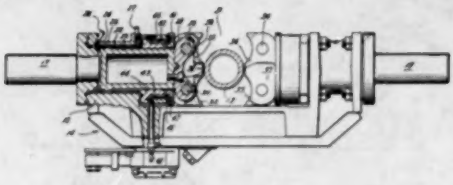
A self-locking separable seam assembly comprising a pair of strips of identical J-shape in cross section extruded from semirigid thermoplastic material featuring a thick semirigid return bend portion bordered by a relatively thin low-height lip positioned to interfere with the corresponding lip of the other strip as the strips are pulled crosswise of one another into interlocking engagement. The seam separates as the two strips are forced past one another in a direction opposite to the assembly operation.

3,638,287
PARACHUTE DEPLOYMENT SYSTEMS
David A. Wright, Fort Erie, Ontario, Canada, and Lorenz Palm, Manhattan Beach, Calif., assignors to Irvin Air Chute Limited, Fort Erie, Ontario, Canada
Filed May 24, 1968, Ser. No. 731,766
Claims priority, application Canada, May 25, 1967, 991,444
Int. Cl. A44b *21/00;* **B64d** *17/54*
U.S. Cl. 24—230 **5 Claims**



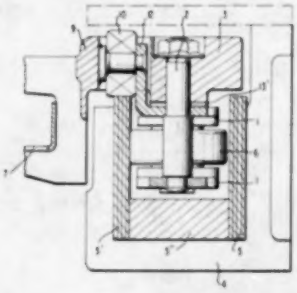
A parachute deployment system and a connector for use in this system. The deployment system utilizes a pyrotechnic device to launch a weighted projectile which is connected to the ripcord and pilot chute of a parachute pack. The connector is to be interposed between the projectile and the ripcord and comprises a mounting plate and a support releasably retained thereon. The support carries a movable member which, when pressure is exerted on a part thereof, releases the support from the mounting plate and completes a connection between the projectile and the ripcord and pilot chute.

3,638,288
GRIPPER
Dale H. Pryor, Houston, Tex., assignor to Youngstown Sheet and Tube Company, Youngstown, Ohio
Original application Sept. 19, 1969, Ser. No. 859,489.
Divided and this application Jan. 18, 1971, Ser. No. 107,124
Int. Cl. B65h *17/34*
U.S. Cl. 24—263 D **9 Claims**



A retractor having an endless train made up of a plurality of grippers. The grippers have contoured gripping faces which are contoured to grip pipe of different sizes and the degree of movement of the grippers toward and away from pipe engaging positions is selectively controlled relatively to the size of pipe being gripped. The grippers are mounted on pivot pins at positions to either side of the center line of the piston supplying the gripping force to increase the resultant gripping force exerted by the grippers.

3,638,289
TENTER FRAME ASSEMBLY
Peter Dornier, and Fritz Gageur, both of Lindau, Germany, assignors to Lindauer Dornier Gesellschaft mbH, Lindau, Germany
Filed Oct. 17, 1969, Ser. No. 867,317
Claims priority, application Germany, May 17, 1969, P 19 25 284.7
Int. Cl. D06c *3/04*
U.S. Cl. 26—61 B **9 Claims**



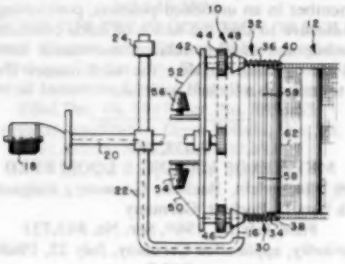
This invention relates to a clip chain assembly for tenter clips comprising a vertical guide rail, a plurality of connected tenter clips each supporting a clip table on one side of the guide rail, first guide roller means secured to each tenter clip and being supported by the guide rail, and second guide roller means mounted between the tenter clips and contacting the side of the guide rail facing away from the clip table.

3,638,290

APPARATUS FOR PRODUCING NONWOVEN FABRICS

Ralph A. Johnson, Moore, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Sept. 4, 1970, Ser. No. 69,847
Int. Cl. D02g *3/00*; D04h *3/08*
U.S. Cl. 28—1 CL **7 Claims**



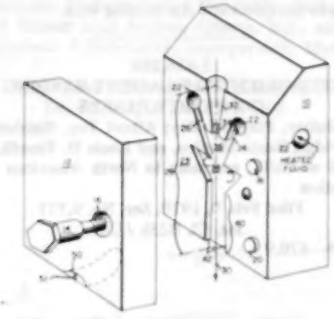
Apparatus for producing nonwoven scrim fabrics wherein the weft thread sheet-forming support means comprises a helical member having a centrally disposed thread support element extending along the axis of the helical member for supporting the weft thread reaches during weft sheet formation.

3,638,291

YARN-TREATING JET

Paul Wesley Yngve, Wilmington, Del., assignor to E.I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 1, 1970, Ser. No. 77,140
Int. Cl. D02g *1/16*
U.S. Cl. 28—1.4 **8 Claims**



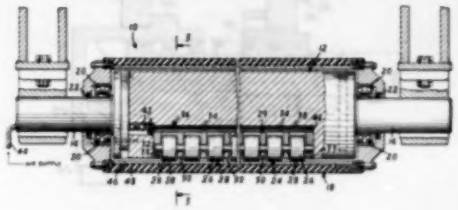
A yarn-treating jet comprising a body and a flat cover clamped together and having two air conduits of equal rectangular cross section for directing heated fluid on a yarn advancing through a passage in the surface of the jet body contiguous with the cover. The passage includes an expansion zone located downstream from the air conduits which has an entrance larger than its exit for the purpose of providing an extended static pressure zone in the jet to improve heat transfer between the heated fluid and the yarn. The cover plate has a guiding surface adjacent the exit of the jet for diverting fluid and entrained yarn outwardly away from the jet exit.

3,638,292

ROLL FOR APPLYING UNIFORM PRESSURE

Stephen B. Gaghan, Franklin Lakes, N.J., assignor to Van Vlaanderen Machine Company, Paterson, N.J.

Filed Oct. 29, 1969, Ser. No. 872,202
Int. Cl. B21b *31/32*
U.S. Cl. 29—113 AD **4 Claims**



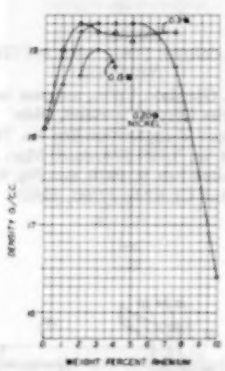
A roll for applying uniform pressure has a stationary inner structure mounted between two supporting shafts. A cylindrical outer structure surrounds the stationary inner structure and is rotatably mounted on the shafts. A plurality of inner rollers is disposed in a slot formed in the inner structure and contacts a colinear series of locations along the inside of the outer structure. An inflatable bag is disposed within the slot and, when inflated with a fluid, applies a uniform pressure to the inner rollers. These rollers prevent the outer structure from deflecting and cause it to apply a uniform pressure to an opposing surface.

3,638,293

HIGH-DENSITY TUNGSTEN-RHENIUM-NICKEL ALLOYS AND ARTICLES

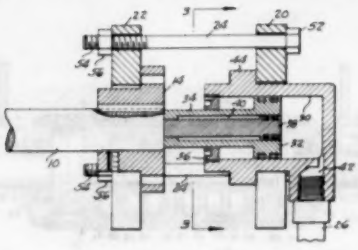
Sven Torsten Lennart Peterson, Vendelso, Sweden, assignor to Lumalampan Aktiebolag, Stockholm, Sweden

Filed Sept. 12, 1969, Ser. No. 857,478
Int. Cl. B22f *3/00*
U.S. Cl. 29—182 **14 Claims**



Sintered alloys of tungsten containing between about 1 percent and 7.5 percent rhenium and between about 0.15 percent and 0.3 percent nickel and electrical articles, particularly contacts, prepared from said alloys. The invention also includes a method of improving the density of tungsten alloys.

3,638,294
WHEEL PULLER
Walter F. Durant, 664 Noank Road, Mystic, Conn.
Filed Jan. 20, 1970, Ser. No. 4,353
Int. Cl. B23p *19/04*
U.S. Cl. 29—252 **8 Claims**

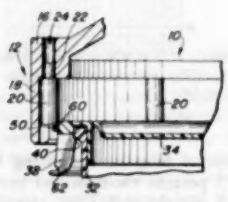


A wheel puller based on a cylinder containing at least two telescoping pistons. The cylinder has a peripheral flange. A U-shaped collar slips over the cylinder and engages the flange. A second U-shaped collar slips over a shaft and engages a wheel to be pulled. Tie rods connect the two collars and a piston rod connected to one of the pistons engages the shaft end.

3,638,295
PROCESS FOR MANUFACTURE OF A GRIP FOR HAND-POWERED EQUIPMENT
William J. Sparks, 5129 Granada Blvd., Coral Gables, Fla.
Filed Aug. 7, 1970, Ser. No. 62,140
Int. Cl. B23q *17/00*
U.S. Cl. 29—407 **10 Claims**

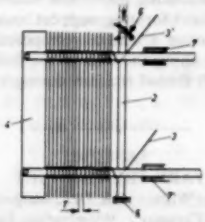
This disclosure relates to a process for manufacture of grips for hand-powered equipment in which an assortment of grips are manufactured, each having a hardness within the range of that of the human hand. The hardness profile of the hand contact area of an individual operator who is to use the grip is measured, and a grip is selected, the hardness of which is correlated with the hardness of the hand contact area of the individual. This grip is installed on the hand-powered equipment for the use of that individual.

3,638,296
CONTAINER CLOSURE TOOL AND METHOD FOR USE THEREOF
George Yates, Jr., Glendale, Calif., assignor to Growth International Industries Corp., Cleveland, Ohio
Continuation-in-part of application Ser. No. 781,556, Dec. 5, 1968, now Patent No. 3,499,574, dated Mar. 10, 1970. This application Feb. 9, 1970, Ser. No. 9,617
Int. Cl. B23p *17/00, 19/00*
U.S. Cl. 29—400 **6 Claims**



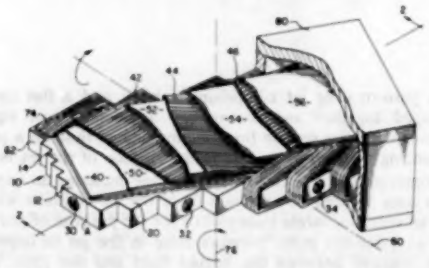
A tool which may be used to lock a closure having a movable sealing member over the opening of a container body comprises a rim corresponding in shape to the configuration on the closure but having dimensions slightly larger than the closure so that it may be slipped downwardly thereover. A handle is attached to the rim, and a series of studs disposed on the inner surface of the rim are adapted to contact the movable sealing member and move it into a locked position when the rim is lowered over the closure. A method of using the tool to lock a closure having a movable sealing member over the open end of the container body comprises placing the closure over the open end of the container body with the sealing member in an unlocked position, positioning the tool over the closure so that the series of studs contacts the closure member and causing relative movement between the tool and the closure so that the tool causes the sealing member to move to a locked position.

3,638,297
METHOD OF MAKING A LOOM REED
Friedhold Ditscherlein, Bocholt, Germany, assignor to Max Spaleck GmbH, Bocholt, Germany
Filed July 22, 1969, Ser. No. 843,731
Claims priority, application Germany, July 22, 1968, P 17 60 943.7
Int. Cl. B23p *11/02*; **D03d** *49/62*
U.S. Cl. 29—446 **3 Claims**



The dents of a reed have ends tied by wire to the backs and shaped so that one of the two parallel faces is convex, the other concave. The dent ends are assembled under resilient, compressive stress to compensate for dimensional inaccuracy in the dents and the binding wire.

3,638,298
STRESS-ORIENTED FILAMENT WINDING IN COMPOSITE PANELS
David I. Sinizer, Playadel Rey; Albert Toy, Gardena; David G. Atteridge, Santa Monica, and Louis H. Fanelli, Los Angeles, all of Calif., assignors to North American Rockwell Corporation
Filed Feb. 9, 1970, Ser. No. 9,771
Int. Cl. B23k *1/20*
U.S. Cl. 29—470.9 **2 Claims**



Removable terraced peripheral edges on a rotating mandrel are adapted to receive successive windings of thin fila-

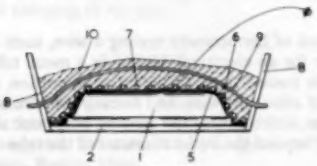
ment in a plurality of separate layers to form reinforced composite panels. The mandrel edges are reversed in position between each winding step to permit winding of filaments at stress-oriented cross-ply angles with a minimum of filament wastage, after which the workpiece components are diffusion bonded together. Rare earth oxides are used in stopoff coatings to prevent bonding of workpiece materials in mandrel surfaces.

3,638,299

PROCESS FOR THE PRODUCTION OF MOLDS

Paul Johnson Garner, and Thomas Robert Stephen Collins, both of Welwyn Garden City, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Dec. 16, 1969, Ser. No. 885,463
Claims priority, application Great Britain, Dec. 30, 1968, 61,659/68; Nov. 3, 1969, 53,693/69
Int. Cl. B23p *17/00, 25/00*
U.S. Cl. 29—527.2 **17 Claims**



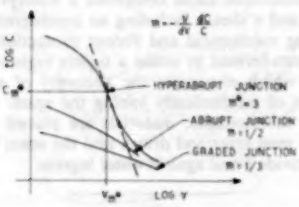
Producing a mold by forming a metal shell around a model, the model being provided with a lip around its base over which the metal shell is formed to key it to the model.

3,638,300

FORMING IMPURITY REGIONS IN SEMICONDUCTORS

George Frederic Foxhall, Spring Township, Berks County, Pa., and Robert Alan Moline, Gillette, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 21, 1970, Ser. No. 39,378
Int. Cl. B01j *17/00;* **H01l** *7/02*
U.S. Cl. 29—589 **5 Claims**



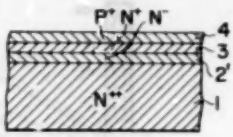
The specification describes a technique for fabricating hyperabrupt silicon diodes with unusually sharp C-V characteristics and with a high degree of control. The technique employs an ion bombardment predeposit and a thermal diffusion "drive-in" according to specifically prescribed conditions.

3,638,301

METHOD FOR MANUFACTURING A VARIABLE CAPACITANCE DIODE

Shigeo Matsuura, Yokohama, Japan, assignor to Hitachi, Ltd., Chiyoda-ku, Tokyo, Japan

Filed June 29, 1970, Ser. No. 50,810
Claims priority, application Japan, June 27, 1969, 44/50411
Int. Cl. B01j *17/00;* **H01l** *7/02*
U.S. Cl. 29—589 **8 Claims**



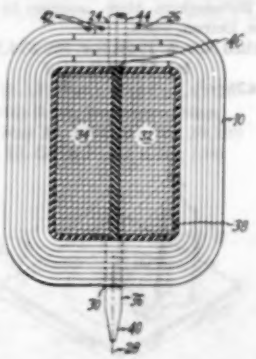
A variable capacitance diode having an improved stepped junction therein formed by epitaxially depositing a P⁻ type layer on a N+ silicon substrate, forming an N+ type layer on the P⁻ type layer, heating the produced segment to a high temperature to cause the impurities contained in the N+ type layer and the N+ type substrate to diffuse into the P⁻ type layer, whereby the P⁻ type layer is converted to an N⁻ type layer, and thereafter forming a P+ type layer on the N+ type layer.

3,638,302

METHOD OF MAKING ELECTROMAGNETIC CORES

Edmund J. Wilk, Adams, Mass., assignor to General Electric Company

Filed Sept. 21, 1967, Ser. No. 669,624
Int. Cl. H01f *7/06*
U.S. Cl. 29—606 **3 Claims**



A concentric magnetic core is assembled from a plurality of precut laminations formed into the desired shape and annealed. A pilot hole is then drilled in the centerline of the uncut yoke of the formed core. The core is then linked with a preformed coil or coils, with the pilot hole being used to insure positive registration of the laminations during lacing about the preformed coil or coils. A second pilot hole may be drilled within the cut yoke to aid in closing the joints if desired. A vibrating pilot pin may be used in the second pilot hole to assure positive closure of the joint in each lamination.

3,638,303

METHOD OF MAKING SENSING ELEMENTS FOR RESISTANCE-TEMPERATURE PROBES

Mitsuaki Mochizuki, Kobe, Japan, assignor to Okazaki Manufacturing Company, Kobe, Japan

Filed Sept. 2, 1969, Ser. No. 854,415
Claims priority, application Japan, Sept. 6, 1968, 43/064097
Int. Cl. H01c 7/00, 17/00
U.S. Cl. 29—614 1 Claim

Resistance temperature probes having novel sensing elements are disclosed. The resistance element is not wound on a rigid support but is supported in a body of particulate, dielectric refractory material. The disclosure includes methods of fabricating the probes including calibration of the resistance in situ.

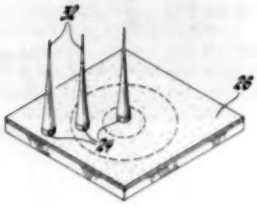
An important feature resides in the method of incorporating the particulate refractory material into the probe. Since it is important to provide the most direct path for exchange of heat between the environment and the sensing element, this latter is allowed to be free-standing and the space between the same and the sheath, is filled with the refractory material. In order not to deform or displace the sensing element, the particulate material is deposited in a manner calculated to provide such support, but not to subject the delicate resistance wire to injurious forces.

3,638,304

SEMICONDUCTIVE CHIP ATTACHMENT METHOD

Carl E. Biell, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 6, 1969, Ser. No. 874,516
Int. Cl. H05k 3/30
U.S. Cl. 29—626 5 Claims



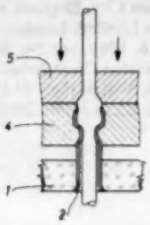
A method for mounting a semiconductive chip on a substrate, using integral leads, and a method for making the leads. The techniques described are particularly useful in making integral leads on a semiconductive chip which can be flipped onto a complementary conductor network. The leads are preferably formed on the chip while the chip is still part of a slice. The leads are simultaneously formed on the slice by progressive solidification from a melt material, and the slice subsequently diced to form the individual leaded chips.

3,638,305

METHOD FOR FORMING THE VACUUMTIGHT CLOSURE OF A THROUGH-CONNECTION

Karl-Heinz Bottcher, Munich-Schwabing, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of application Ser. No. 687,672, Dec. 4, 1967, now abandoned. This application May 7, 1970, Ser. No. 37,384
Int. Cl. H01r 43/00
U.S. Cl. 29—628 R 2 Claims



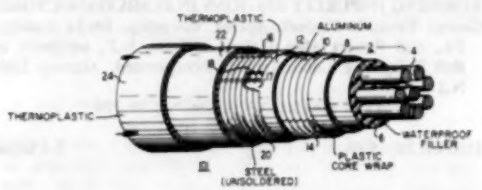
A method of hermetically sealing a wire, such as a lead-in conductor for an electrical device, in a metal tube in which the wire is passed through the tube, a portion of the tube constricted about the wire, and forcing the wire into one end of the tube which causes the tube to bulge out and the wire thickened beyond the initial diameter of the tube.

3,638,306

METHOD OF MAKING A COMMUNICATIONS CABLE

Henry N. Padowicz, Chatham Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 24, 1970, Ser. No. 75,072
Int. Cl. H01b 13/26
U.S. Cl. 29—624 3 Claims



A communications cable comprises a waterproof core of conductors and a sheath including an unsoldered steel layer for providing mechanical and rodent protection. The steel layer is stretch-formed to attain a tightly registered longitudinal seam which eliminates the necessity of soldering or other means of mechanically joining the seam. Coatings of appropriate thermoplastic materials are placed on the surfaces of the steel layer and drawn into the seam by capillary action to provide a seal against water ingress.

3,638,307

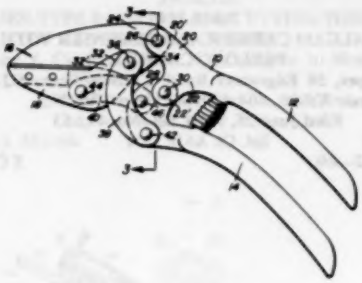
CUTTING SHEARS

Charlie G. Stewart, P.O. Box 327, Fairfield, Ala.

Filed Oct. 30, 1969, Ser. No. 872,615
Int. Cl. B26b 13/26
U.S. Cl. 30—193 7 Claims

A pair of shears including relatively swingable jaws and relatively swingable levers. The jaws are pivotally connected

for relative swinging about a first axis stationarily positioned relative to both jaws and the levers are also connected for relative swinging movement. The levers are further operatively connected to the jaws for relative swinging of the latter in response to relative swinging of the levers with the axis of relative swinging of the jaws shifting relative to both levers during relative swinging of the jaws.



3,638,308
RAZOR BLADES

Irwin W. Fischbein, Canton, Mass.; John D. Galligan; Anthony M. Schwartz, both of Washington, D.C., and William S. Youngquist, Belmont, Mass., assignors to The Gillette Company, Boston, Mass.

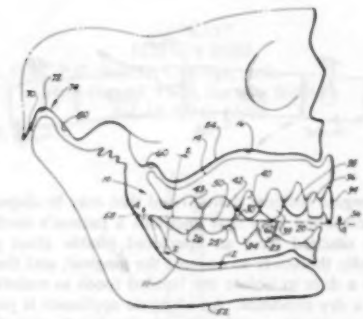
Filed Feb. 1, 1968, Ser. No. 702,212
Int. Cl. B26b *21/54*; **B30b** *15/08*
U.S. Cl. 30—346.53 **19 Claims**

The present invention is concerned with improving the shaving properties of razor blades. Generally the improvements are brought about by applying a solid, water-resistant polymeric polyether coating to the blade edge.

3,638,309
ARTIFICIAL DENTURE

John P. Frush, 704 Highland Drive, Pasadena, Calif.

Filed Jan. 29, 1970, Ser. No. 6,904
Int. Cl. A61c *13/00*
U.S. Cl. 32—2 **16 Claims**

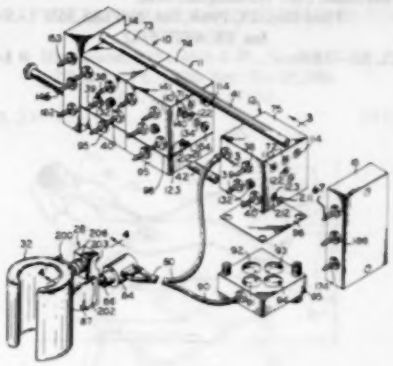


A denture is constructed with molars in a first denture base having flat chewing surfaces in a common plane. Elongated ridges on opposing molars in a second denture base provide a biting edge which makes continuous linear contact in centric occlusion with the flat surfaces in the same common plane. The plane passes through upper portions of the retromolar pads and the incisal edges of the central incisors, and is also substantially parallel to a line passing through the hamular notches. Parallel transverse ridges on the upper first or second bicuspids engage the lower posterior biting edge in protrusive movement to keep the denture bases seated.

3,638,310
DENTAL HANDPIECE CONTROL

George K. Austin, Jr., 604 Holly Drive, Newberg, Oreg.

Filed Oct. 24, 1969, Ser. No. 869,088
Int. Cl. A61c *9/00*
U.S. Cl. 32—22 **21 Claims**

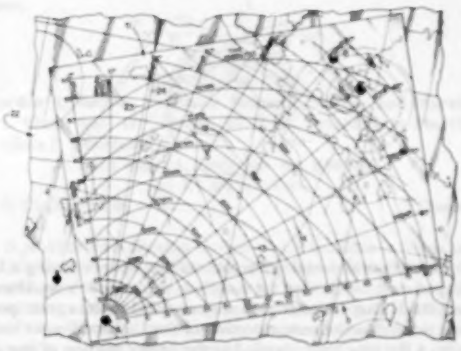


A plurality of module control block assemblies individually control to a plurality of dental handpieces the supplies of drive air to the handpiece motors, and air and water coolants, and also supply drive air pressure to a gauge. The control block assemblies are clamped in series between distributing end blocks. A hanger assembly normally adapted to actuate a control block assembly when a handpiece is lifted from the hanger assembly has a manually operable lockout lever which prevents such actuation to permit changing of burrs of the handpiece or to inactivate that control block assembly.

3,638,311
NAVIGATIONAL CALCULATOR

Henry Chin, 1 Davida Road, Burlington, Mass.

Filed May 20, 1970, Ser. No. 39,109
Int. Cl. G09b *29/00*; **G06g** *1/00*
U.S. Cl. 33—1 **6 Claims**



A calculator for solving navigational problems, particularly adaptable for use by pilots of light planes. The calculator is a

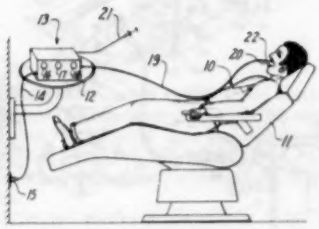
single sheet of flexible, transparent material having a set of curves which, when used in conjunction with a navigational chart, provide direct readings of speed, distance, time and direction.

3,638,312

APPARATUS FOR CONCENTRATING ULTRAVIOLET RADIATION, FOR CURING POLYMERIZABLE COMPOSITIONS AND METHOD FOR HARDENING FILLING COMPOSITIONS IN DENTAL CAVITIES

John J. Szwarc, North Versailles, Pa., and Thomas E. Doyle, Port Washington, Wis., assignors to Freeman Chemical Corporation, Port Washington, Wis.

Filed Dec. 29, 1969, Ser. No. 888,350
Int. Cl. A61k 5/02
U.S. Cl. 32—15 1 Claim



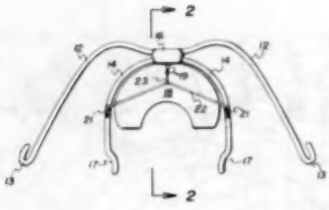
Method for curing polymerizable compositions employing ultraviolet radiation exposure. The concentrated ultraviolet radiation may be employed to cure certain polymerizable resinous compositions which can be initiated by exposure to ultraviolet radiation. The method is particularly useful for curing dental cavity filling compositions quickly and with nearly insignificant polymerization exotherm.

3,638,313

EXTRA ORAL DENTAL RETRACTOR AND BITE OPENER

Alberto J. Cervera, Miquel Angel, 1, DPDO, Madrid, 10, Spain

Filed July 14, 1970, Ser. No. 54,729
Int. Cl. A61c 7/00
U.S. Cl. 32—14 D 5 Claims



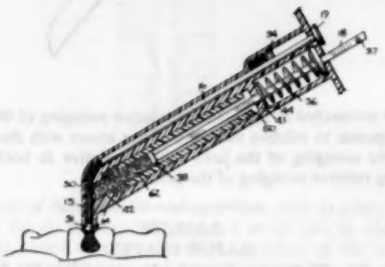
An extra oral dental retractor and bite opener having a U-shaped outer arch wire for coupling to a wearer's neckband and the U-shaped inner arch wire coupled in the center portion thereof to the center portion of the U-shaped outer arch wire; a flat bite plate coupled to the center portion of one or both U-shaped arch wires and extending rearwardly therefrom for separating the upper and lower front teeth of the wearer; an elastic band coupled across the inner U-shaped arch wire for resting on the front teeth of the wearer and having a center portion pivotally attached by a wire to the front portion of the bite plate for limiting the travel of the elastic band.

3,638,314

AMALGAM CARRIER AND DISPENSER WITH PRELOAD CAPSULE

Oscar Lopez, 50 Edgewater Road, Cliffside Park, N.J., and Juan Cesar Valdes, 404 46th St., Union City, N.J.

Filed June 25, 1970, Ser. No. 49,653
Int. Cl. A61c 5/04
U.S. Cl. 32—60 5 Claims



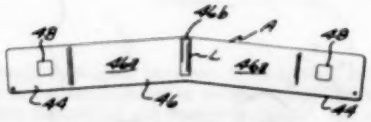
An amalgam carrier and ejector with preload capsule comprises two parallel, elongated tubular members. The tubular members each have a plunger and a common nozzle. One member is adapted to receive an amalgam capsule from which amalgam is extruded into the nozzle by the plunger of one tubular member and is ejected by the plunger of the other tubular member. The capsule has a tubular body, the interior of which is of increasing area toward the nozzle end thereby eliminating any tendency to clog during the extrusion of the amalgam.

3,638,315

DAM RETAINING DENTAL BAND ASSEMBLY

I. Edward Brenner, 800 West Amerige Ave., Fullerton, Calif.

Filed Nov. 3, 1970, Ser. No. 86,397
Int. Cl. A61c 5/12
U.S. Cl. 32—63 5 Claims



An elongate resilient dental band that may be disposed to form a tensioned loop that encircles a patient's tooth, and when so situated have an apertured pliable sheet guided downwardly thereover to contact the gingival, and the sheet acting as a dam to isolate the banded tooth to maintain the latter in a dry condition. An elongate appliance is provided that is operatively associated with the band, with the appliance serving a twofold purpose, first to apply a desired degree of tension to the band to maintain it in an encircling position about a tooth, and secondly, to act as a guide to permit an apertured dam to be slid longitudinally therealong, and then downwardly over the banded tooth to engage the gingival of the patient. The band is provided with dam-retaining means that permit downward movement of the dam thereover, but which engage the portion of the dam adjacent

the band to prevent the dam being inadvertently dislodged from the tooth by an upward force being exerted thereon by the patient's tongue.

3,638,316
PLIER-TYPE BAND PRY AND CUTTING TOOL FOR ORTHODONTISTS

Anthony J. Cusato, Closter, N.J., assignor to Henry Mann, Inc., Feasterville, Pa.

Filed Dec. 1, 1970, Ser. No. 94,131
Int. Cl. A61c *7/00*
U.S. Cl. 32—66 **10 Claims**

This invention pertains to a plier-type handtool for orthodontists in which is provided jaws having either two separate mating pairs or a dual purpose single pair of specially contoured jaws. In the preferred embodiment in which the jaws have separate mating pairs on of the pairs is beak-shaped to provide a pincer or pry means disposed to enter the crack between a thin stainless steel band mounted on the tooth of a patient and by urging the jaws toward each other to bend or displace the band locally outwardly from the tooth. The other pair of specially contoured jaw members are cutting members disposed to compression cut the band at the locally displaced area previously formed by the beak-shaped pair of jaw portions. In another embodiment the beak-shaped jaw pry portions are combined with compression-type cutting segments or portions to provide means for simultaneously prying from and cutting a thin metal band mounted on a tooth of a patient.

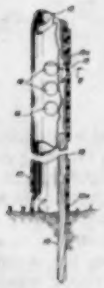
ERRATUM

For Class 33—1 see:
Patent No. 3,638,311

3,638,317
SURVEY ROD

Paul A. Felix, P.O. Box 32, Coolidge, Ariz.

Filed Oct. 13, 1969, Ser. No. 865,671
Int. Cl. G01c *15/06*
U.S. Cl. 33—74 **1 Claim**

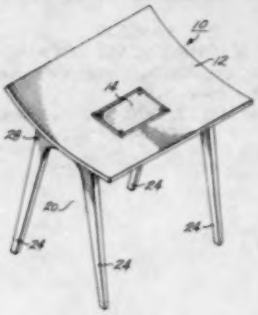


A lightweight survey rod assembly which includes an elongate hollow formed of fusible plastic and having visible survey indicia graduations carried in the external surface of the hollow member. The lower end of the hollow member is sized and shaped to accommodate the upwardly extending exposed end of a survey stake to support the rod in substantially vertical position, facilitating one-man surveying operations. In one embodiment, a second hollow member is coaxially telescoped within the hollow member described above and manually displaceable resilient stop means formed in the outer member are provided to releasably position the inner hollow member at a fully telescoped position and at a raised position.

3,638,318
DRAFTING APPARATUS AND METHOD OF USE THEREOF

Thomas R. Herrmann, 5256 46th S.W., Seattle, Wash.

Filed Apr. 6, 1970, Ser. No. 25,988
Int. Cl. A47b *27/00*
U.S. Cl. 33—75 **19 Claims**



A curved drawing board and an associatedly curved rectangular parallel ruling slider mounted thereon. The rectangular parallel ruling slider including glides extending from each corner and making substantially point contact with the curved drawing board such that when all glides are in contact with the drawing board the edges of said parallel ruling slider assume a constant spatial relationship with the surface of said board such that lines drawn on a sheet of paper on said board along these edges are either horizontal or vertical.

A method of drawing horizontal or vertical lines by positioning a rectangular frame on a curved drawing board and using the edges of said frame as a guide for drawing said lines.

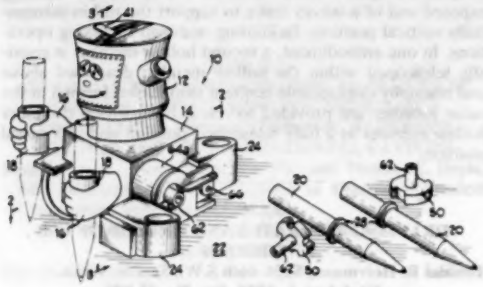
3,638,319
DESIGNING TOY

Gordon A. Barlow, Evanston; Burton C. Meyer, and Marvin I. Glass, both of Chicago, all of Ill., assignors to Marvin Glass & Associates

Filed Aug. 11, 1969, Ser. No. 848,856
Int. Cl. B43l *13/00*
U.S. Cl. 33—18 R **7 Claims**

A mechanized drawing device which includes a frame on which is mounted a plurality of power-operated movable members such as a pair of wheels for moving the frame about a marking surface. A battery-operated motor is mounted on the frame to rotate the wheels and move the frame in a given direction or path. A cam-operated device is driven by the motor and is associated with one of the wheels to intermittently render that wheel inoperative whereby the frame will intermittently pivot about that wheel to move the frame out of the given direction of travel. A marking member is

mounted on the frame to trace the pattern of movement of the frame on the marking surface. The cam device is readily

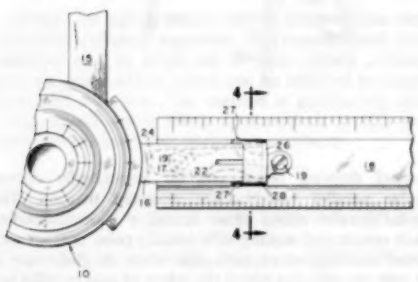


replaceable by other cams having different configurations so as to provide for varying tracing patterns.

3,638,320
DRAFTING MACHINE SCALE LOCKING DEVICE

Allister L. Baker, Denville, N.J., assignor to Keuffel & Esser Company, Morristown, N.J.

Filed May 22, 1970, Ser. No. 39,845
Int. Cl. B43l *13/02*
U.S. Cl. 33—79 R **7 Claims**



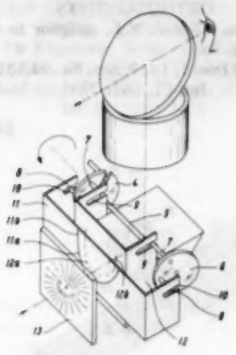
The jam-fit connection between the tapered channel of a drafting machine protractor head scale arm and a like-tapered chuckplate of a drafting scale or rule is relieved by a split in the channel portion of the scale arm. A detachable retainer clip laterally containing the split portion of the scale arm ensures a firm union between the scale arm and the scale chuckplate during drafting operations, yet may readily be removed to allow the channeled portion of the scale arm to spread and release the engaged scale chuckplate. Scales may thus be readily removed and replaced without excessive force being applied to the protractor head.

3,638,321
AIMING DEVICE FOR LIGHT WEAPONS PARTICULARLY FOR COMBATING MOVING AIR TARGETS

Hans Eglin, Geneva, Switzerland, assignor to Mathema Corporation, reg. Trust, Vaduz, Liechtenstein

Filed Nov. 5, 1969, Ser. No. 874,232
Claims priority, application Germany, Dec. 20, 1968, P 18 15 992.7
Int. Cl. F41g *3/08*
U.S. Cl. 33—49 B **8 Claims**

A device for determining lead values, appears with the lead directions being represented as apparent flight directions, in the viewing field of a telescope or reflex sight, in the form of radial line markings. The radial line markings are associated with at least one lead curve which is movable relative to the line markings and is driven only as a function of the elevation

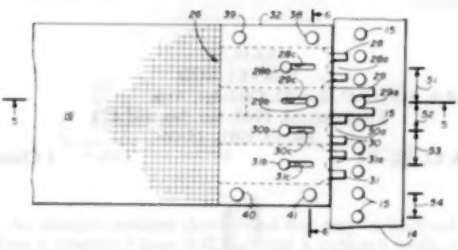


aiming movement of the weapon. Two lead curves are provided, each assigned to a respective different target speed. The lead curve assigned to the faster target speed is driven in accordance with the sine function of the elevation angle of the weapon, and the lead curve assigned to the slower target speed is driven in accordance with the cosine function of the elevation angle of the weapon. The radial line markings present lead markings formed by interruptions therein as well as by their inner ends adjacent the cross hairs of the viewing field.

3,638,322
GUIDEBAR

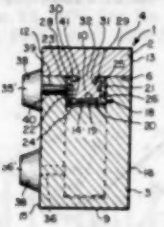
Elmer Harold Cunningham, Box 552, Bowie, Tex.

Filed Dec. 23, 1969, Ser. No. 887,536
Int. Cl. B43l *13/24*
U.S. Cl. 33—81 **8 Claims**



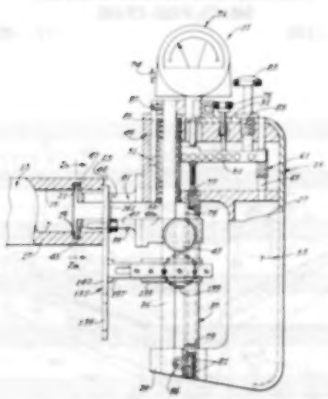
A guidebar which may be positioned at intervals over a work surface by affixing fastening elements on the ends of the guidebar to evenly spaced mating members positioned along the margins of the work surface. The guidebar has two or more fastening elements on each end. The fastening elements on each end are at an interval unequal to that between the mating members along the margins so that the guidebar may be fixed at intervals on the work surface which are equal or unequal to the distance between the mating members positioned along the margins of the work surface.

3,638,323
MEASURING DEVICE
Robert O. Groe, 3328 N. Page St., Chicago, Ill.
Filed Mar. 31, 1970, Ser. No. 5,779
Int. Cl. G01b 3/20
U.S. Cl. 33—162 9 Claims



A measuring instrument comprising a pair of triangular relatively suitable blocks having hypotenusal mating surfaces and parallel base surfaces, correlated registering measuring indicia on respective sides of the blocks, a tongue and groove interlock between said blocks, and a resilient deformable material such as nylon interposed between the tongue and groove releasably holding the parts in incrementally adjusted positions as the blocks are relatively moved along the mating surfaces, and a screw threaded through one block and engageable with the tongue on the other block for locking the blocks against accidental displacement.

3,638,324
GAGE
Cass Kalfesh, 9947 Corella, Whittier, Calif.
Filed July 31, 1969, Ser. No. 846,356
Int. Cl. G01b 5/12, 5/16, 5/28
U.S. Cl. 33—174 23 Claims

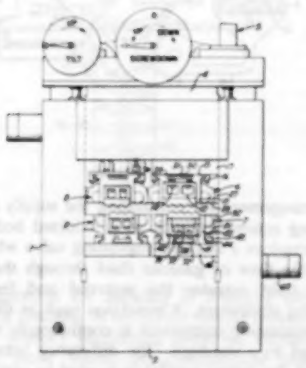


A gage including a supporting structure, a first finger element mountable in fixed relationship on the supporting structure and a second finger element movably mounted on the supporting structure. The finger elements are insertable into a bore to provide a measurement thereof. A squaring member is mounted on the supporting structure and is engageable with the outer face of the work to control the angle at which the fingers project into the bore.

3,638,325
VERTICAL ALIGNMENT GAUGE
Albert V. Petrik, 2866 Joyce Road, Roslyn, Pa.
Filed Oct. 16, 1969, Ser. No. 866,995
Int. Cl. G01c 15/10
U.S. Cl. 33—216 2 Claims

A telescopically adjustable tubular construction for upright arrangement having a central opening in its upper end and permanent magnet means extending laterally from an upper region of the tubular construction for holding engagement with a doorjamb or the like, a standoff member adjacent to a lower region of the tubular construction, a window provided in a lower region of the tubular construction, and plumb bob means suspended interiorly of the tubular construction visually accessible through the window.

3,638,326
ROLLER LEVELER WITH QUICK LIFT UPPER ROLL UNIT
Elbert Gordon Thompson, State College, and Max F. Alters, Pleasant Gap, both of Pa., assignors to Sutton Engineering Company, Pittsburgh, Pa.
Filed Jan. 29, 1970, Ser. No. 6,749
Int. Cl. G01b 3/38
U.S. Cl. 33—182 6 Claims



A roller leveler housing has end frames at the opposite ends of a bed and vertically movable top beam. Between the

bed and beam is a vertically spaced pair of roll units, the upper one of which is suspended from the beam. At the ends of the housing there are vertical screws, the lower ends of which are connected to the upper part of the end frames for limited vertical movement. Nuts mounted on the screws are rotatably connected to the top beam, and means are provided for turning the nuts to adjust the beam up and down the screws. Connecting the top beam to the bed of the housing are fluid pressure operated means that normally hold the screws in their lower position, but can be reversed to quickly lift the top beam until the screws reach their upper position.

3,638,327
PROCESS FOR PRODUCING ALUMINUM CHLORHYDROXIDES

Edward F. Levy, Newtonville; Roy H. Karlson, Newton, and Ursula E. Hornig, Jamaica Plain, all of Mass., assignors to The Gillette Company, Boston, Mass.

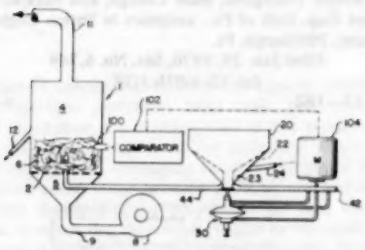
Filed Apr. 17, 1969, Ser. No. 817,153
Int. Cl. F26b *5/06*
U.S. Cl. 34—5 **2 Claims**

The present invention is concerned with novel aluminum chlorhydroxides which have substantially improved solubility in alcohols and with processes for preparing such chlorhydroxides. Generally, the chlorhydroxides of the present invention are produced by freeze drying aluminum chlorhydroxides from aqueous solutions.

3,638,328
FEED CONTROL SYSTEM FOR PROCESSING EQUIPMENT

Paul E. Solt, Allentown, Pa., assignor to Fuller Company

Filed Aug. 27, 1970, Ser. No. 67,447
Int. Cl. F26b *3/08*
U.S. Cl. 34—10 **10 Claims**

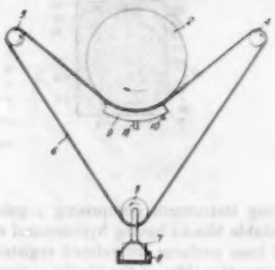


An arrangement for controlling the supply of material to processing equipment such as a fluidized bed reactor. The system employs a material-regulating valve which is responsive to the flow of gaseous fluid through the system. The gaseous fluid entrains the material and feeds it to the processing equipment. A condition such as the temperature of the processing equipment is continuously monitored and compared to a standard. The difference between the standard and the actual condition is used to control a variable restriction in the gaseous fluid supply line which in turn controls the amount of material admitted to the gaseous fluid supply line.

3,638,329
APPARATUS FOR TREATMENT OF SHEET STRUCTURES

William Geoffrey Parr, Pontypool, England, assignor to Imperial Chemical Industries Limited, London, England

Filed May 7, 1970, Ser. No. 35,521
Claims priority, application Great Britain, May 19, 1969, 25,492/69
Int. Cl. F26b *11/02*
U.S. Cl. 34—122 **10 Claims**

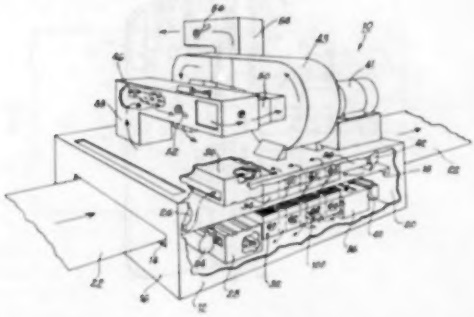


Apparatus for the continuous treatment of sheet structures with a gaseous fluid under low controlled mechanical pressures, in which the sheet structure is supported between a nondeformable, impervious movable member and a porous, conformable, movable member, the porous member forming for at least part of the distance over which it and the rigid member are in contact with the sheet structure a wall of a chamber within which the treatment fluid is maintained.

3,638,330
WEB SUPPORT NOZZLES FOR DRIER

Arthur G. Stout, Lincolnwood, Ill., assignor to Web Press Engineering, Inc.

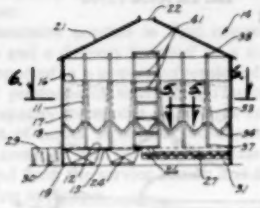
Filed May 8, 1970, Ser. No. 35,855
Int. Cl. F26b *13/00*
U.S. Cl. 34—156 **12 Claims**



A nozzle structure for a web-drying apparatus, in which a web is supported between upper and lower pressurized airflows, is provided by a plurality of airflow passageways arranged in a honeycomb configuration, each passageway being supplied through a supply orifice of smaller cross section than the cross section of the passageway, and with the honeycomb providing multiple transverse rows in juxtaposi-

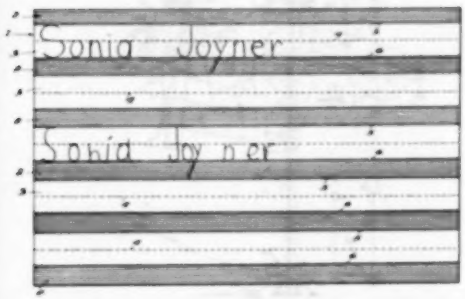
tion so as to provide an elongated layer of air between the nozzle and the web which operates to prevent contact between the web and the nozzle during high-speed transport through the drier.

3,638,331
GRAIN-DRYING DEVICE
Vincent B. Steffen, 3 N. Walnut Ave., New Hampton, Iowa
Filed Mar. 12, 1970, Ser. No. 18,985
Int. Cl. F26b *19/00*; **A01f** *25/00*
U.S. Cl. 34—231 **9 Claims**



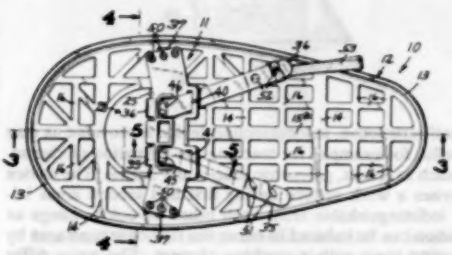
An improvement for drying grain in a grain bin is disclosed herein. This improvement comprises a plurality of staves having, in cross section, an undulating configuration. The staves are disposed in an upright manner and in spaced relation in a drying bin. Dry air from the plenum chamber moves vertically up the staves in the undulations and creates a vertical drying front in addition to the horizontal drying front. Additionally, dry air is introduced into the apex of the bin by these staves thereby keeping it dry and minimizing spoilage of the upper layers.

3,638,332
WRITING READINESS PAPER
Ann M. Jones, Route 1, Box 286, Greenville, N.C.
Filed Mar. 6, 1970, Ser. No. 17,067
Int. Cl. G09b *11/04*
U.S. Cl. 35—37 **5 Claims**



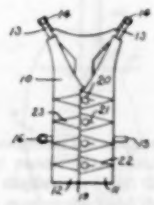
Writing readiness paper for aiding teachers in teaching very young children to print on the proper lines thereof consisting of a sheet of paper having a plurality of series of different colored horizontal parallel lines thereon, each of the series of colored lines comprising an upper green line and a lower red line, the green and red lines being separated by a first writing band, a yellow line dividing the first writing band substantially in half, a second writing band of a width substantially half that of the first writing band for separating each of the series of colored lines, the second writing band being colored so as to visibly distinguish the second writing band from the first writing band.

3,638,333
SNOWSHOE AND HARNESS
Hans W. Sprandel, 7715 Beach St. N.E., Minneapolis, Minn.
Filed July 20, 1970, Ser. No. 56,543
Int. Cl. A63c *13/00*
U.S. Cl. 36—4.5 **8 Claims**



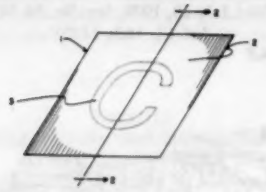
A molded plastic snowshoe including a frame with webbing therebetween and a transversely extending pivot with a horizontal opening defined in the snowshoe immediately in front of the pivot. A one-piece molded plastic harness includes two straps which encircle the pivot and extend around the rear of a boot and a third strap that forms a loop to receive and hold the toe of the boot. Thus, the harness pivotally engages the boot on the snowshoe and the opening in the snowshoe allows the toe of the boot to pass therethrough during perambulation.

3,638,334
TRAINING GARMENT
Ethel M. Malikowski, South 150 Chestnut, Spokane, Wash.
Filed July 28, 1970, Ser. No. 58,812
Int. Cl. G09b *1/00*
U.S. Cl. 35—8 R **2 Claims**



A training garment for assisting in teaching persons to fasten articles of clothing. A simulated vest or trouser front is provided with sensory identifying fastening elements corresponding to those found on conventional articles of clothing. Indicia such as color is used to assist in the recognition of the proper operative relationship of the fastener elements. Specifically, matching colors, buttons and buttonholes and contrasting zipper elements are provided.

3,638,335
EDUCATIONAL DEVICE
Allan A. Gundersen, Sinking Spring, and Fred T. Ramsey, Oley, both of Pa., assignors to Wyomissing Corporation
Filed Feb. 2, 1970, Ser. No. 7,777
Int. Cl. G09b *11/04*
U.S. Cl. 35—36 **9 Claims**



A self-instructive, autocorrective device is provided as may be useful, for example, for teaching the formation of characters, such as letters, geometric shapes and indicia. The device comprises a work surface having first and second areas initially indistinguishable from each other. A color change or formation can be induced in either the first or second area by contacting them with a marking element. The areas differ from each other in that the color change or development in the first area is substantially instantaneous while the color change or development in the second area does not become visible for a delayed period of time. Accordingly, the device is self-instructive since it provides an immediate reward to the student when the writing instrument is moved within the first area, and it is autocorrective since, after the exercise has been completed, a color change or development becomes visible in the second area to indicate the extent to which the student may have strayed from the first area in performing the prescribed exercise.

ERRATUM

For Class 36—4.5 see:
Patent No. 3,638,333

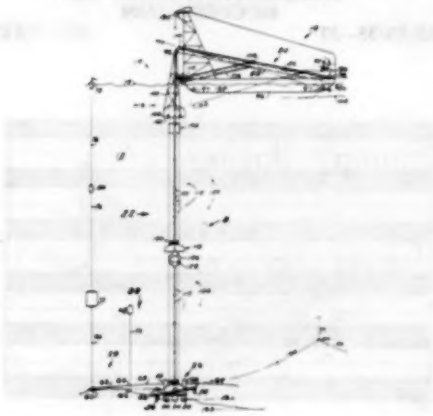
3,638,336
PROTECTIVE SHOE INSERT
Jack J. Silverman, 15 Cypress Road, Eastchester, N.Y.
Filed Apr. 7, 1970, Ser. No. 26,345
Int. Cl. A43b *13/38*
U.S. Cl. 36—44 **3 Claims**

A protective insert for a shoe, the insert being contoured to conform to the insole of the shoe and having a sculptured heel portion to cup the heel of the wearer in the space between the counter of the shoe and the insole. The insert is formed by an underlayer of foamed, closed-cell, flexible plastic material of high density, laminated to a face layer of a fabric which is longitudinally stretchable to facilitate sliding of the foot within the shoe.

3,638,337
SHOE CLEAT CONSTRUCTION
Harry C. Dollar, Jr., Mebane, N.C., assignor to Econo-Kleat Company, Incorporated
Filed May 18, 1970, Ser. No. 38,042
Int. Cl. A43c *15/00*
U.S. Cl. 36—67 R **8 Claims**

A shoe having one or more cleats rigidly secured to the outer surface thereof by adhesive. Each cleat includes integral shank and base portions of plastic or metal having depressions with the base portion positioned adjacent the shoe sole or heel.

3,638,338
APPARATUS AND METHOD FOR DEEP SEA DREDGING
Arthur J. Nelson, 3304 Shasta Drive, San Mateo, Calif.
Filed Nov. 4, 1969, Ser. No. 873,985
Int. Cl. E02f *3/88*
U.S. Cl. 37—65 **11 Claims**



A pair of cutters and a dredge pump mounted to a lowermost pontoon is immersed to penetrate the floor of a body of water employing an indicator to limit the depth of cut for the pendulous traverse over a selected floor area. Anchors are selectively embedded into the floor remote to the dredged area to which wires are connected extending from powered winches mounted on the lowermost pontoon. The extended anchored wires are intermediately supported by a buoyed pendant so as to elevate those wires off the floor to avoid

prolonged dragging and contaminating effect to them. Consequential with the catenary curve resulting from that elevation, a tension is developed creating an artificial demand of a slacked wire paid off one of a pair of identical winches at a greater rate than the opposite wire hauled-in to effect the pendulous swing established by a wire fixed to an anchor axially central with but remote to the selected area. Each pendulous swing is at a radius shortened by a winch oriented in mounting with the two identical winches so that all wires lead from the winch as tangent lines direct to the anchor. The anchors are relocated by towing on a surfaced conduit pendant extending to a lower buoy of adjustable support capacity secured by a cable pendant to the anchor whereby the buoy lift capacity is increased to free the embedded anchor off the floor.

An articulative conduit in fluid communication between the pump and a delivery terminal on a surfaced service station is supported as a suspended tensioned array stabilized by immersed pontoons of selected and automatically adjusted support capacity responsive to changes encountered. An arrangement of hoists, structural provisions and utilization of pontoons common with the array facilitate the transfer of objects to and from the service station and the array to modify the dredging apparatus.

3,638,339

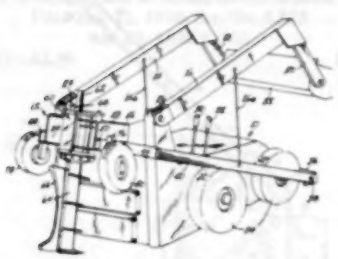
SLIT TRENCH DIGGING APPARATUS

Albam M. Vik, New Brighton, Minn., assignor to Inventors Engineering Inc., Fridley, Minn.

Continuation of application Ser. No. 732,970, May 29, 1968, now abandoned. This application Aug. 6, 1970, Ser. No. 61,828

Int. Cl. E02f *5/02*

U.S. Cl. 37—98 **9 Claims**



An excavating blade projects downwardly from a framework into the earth with an energizing mechanism connected to the blade for intermittently forcing portions of the blade laterally against the sidewalls of the trench to compress the earth adjacent to the blade. The trench is in this way formed by lateral pressure. The blade can be mounted for oscillation through an arc of 20° about a vertical axis. A motor oscillates the blade about this axis at a frequency of about 150–400 cycles per minute.

3,638,340

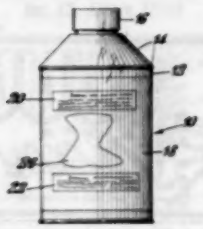
COMBINATION LABEL FOR PACKAGED PRODUCT AND PRINTED-ON REMOVABLE DECAL

Lawrence A. Gottschalk, Montrose, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Nov. 3, 1969, Ser. No. 873,574

Int. Cl. A44c *3/00*

U.S. Cl. 40—2 **3 Claims**



Disclosed is the novel combination of a label for a packaged product and a removable, water-soluble decal printed onto the label.

3,638,341

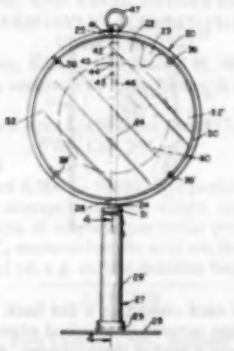
ROTARY SIGN DEVICE

John E. Holmes, Leeds, N. Dak.

Filed Nov. 4, 1969, Ser. No. 873,981

Int. Cl. G09f *11/02, 7/02*

U.S. Cl. 40—39 **2 Claims**



The invention comprises a transparent sign having a pair of transparent center panels fitted into a sleeve. The center panels surround a display card and the sign has wind receiving recesses which receive the wind for rotating the sign.

3,638,342

DISPLAY APPARATUS

Frank T. Winslow, 4611 South Whipple, Chicago, Ill., and Robert B. Stanish, 3023 South Farrell, Chicago, Ill.

Filed Oct. 13, 1969, Ser. No. 865,925

Int. Cl. G09f *13/24*

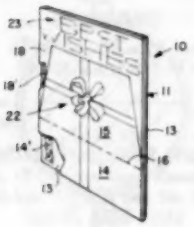
U.S. Cl. 40—106.21 **13 Claims**

A liquid that is opaque or translucent and colored is drawn out of passageways in one or several aligned transparent plastic vacuum-formed passageway panels from one or more

than one outlet in each panel to uncover lines and areas on one or several design panes, which lines and areas overlie portions of the passageways to form a design of either of two types, which are: (1) formed of lines that are opaque on an opaque background of different color with the design being positioned behind a passageway panel so that the lines of the design are uncovered to daylight as the liquid is drained out of the passageway panel; and (2) with the lines forming the

design being transparent or translucent with an opaque background and aligned with a lamp so that the passageways permit light to shine through the transparent or translucent lines and areas as the liquid is withdrawn. In each of the embodiments special display effects are obtainable through the use of bubbles, ultraviolet light and color mixing.

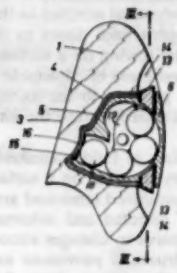
3,638,343
OCCASIONAL CARD
Clyde S. West, 620 Comet Drive, San Mateo, Calif.
Filed Mar. 10, 1970, Ser. No. 18,121
Int. Cl. G09f *1/00*
U.S. Cl. 40—124.1 **13 Claims**



An occasional card comprises a flat back panel having a front panel portion secured at marginal edges thereof to the back panel to form a pocket therebetween. A cover panel is hingedly connected to the front panel portion by a scoreline to form a receptacle along with the pocket adapted to have an insert card positioned therein.

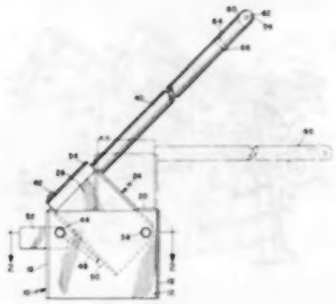
3,638,344
RIFLE STOCK WITH A DETACHABLE SPARE MAGAZINE CONTAINED THEREIN
Karl Wagner, and Horst Wesp, both of Steyr, Austria, assignors to Steyr-Daimler-Puch Aktiengesellschaft, Vienna, Austria
Filed Sept. 10, 1969, Ser. No. 857,637
Claims priority, application Austria, Sept. 27, 1968, A 9422/68
Int. Cl. F41c *23/00, 25/00*
U.S. Cl. 42—71 R **4 Claims**

The butt of the rifle is formed on its right-hand side with a well, in which a drum-shaped spare magazine is removably accommodated, which closes the well and conforms to the outside surface of the butt on the right-hand side thereof. Detent means are carried by said magazine and said butt and



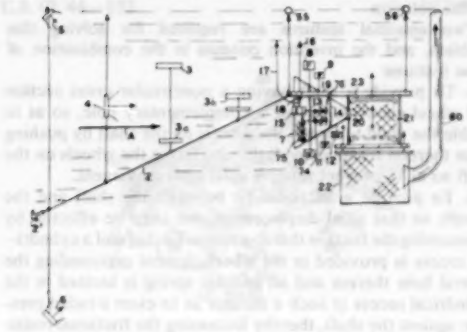
releasably hold said magazine in position in said well. Said detent means comprise at least one spring-loaded detent element which is carried by said magazine and interlocks with said butt.

3,638,345
ADJUSTABLE PURSE RING STRIPPER
Morris L. Whaley, 4140 The Hill Road, Bonita, Calif.
Filed Oct. 6, 1969, Ser. No. 864,138
Int. Cl. A01k *73/12*
U.S. Cl. 43—8 **9 Claims**



In the operation of recovering a purse seine loaded with fish, a pickup line is passed through the gathered purse rings and attached at one end to a prong mounted on the side of the boat. By hoisting the other end of the pickup line the rings are made to slide on the prong and are retained in order, without the need for manual handling. When the empty net is being stowed, the rings strip off the prong in proper order. The prong is adjustable to an angularly upwardly extending position for purse seining, wherein the net is hauled through an overhead power block for stowage, and to a generally horizontal position for drum seining, wherein the stowed net is rolled on a drum.

3,638,346
FISHING TRAP
Julian Stein, 338 Farrway Drive, Franklin Square, N.Y.
Continuation-in-part of application Ser. No. 770,032, Oct. 23, 1968, now Patent No. 3,494,064. This application Feb. 9, 1970, Ser. No. 9,539
Int. Cl. A01k *79/02, 71/00*
U.S. Cl. 43—17.1 11 Claims

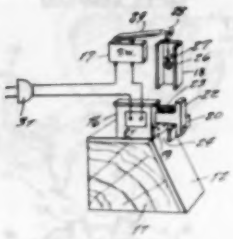


A fishing trap enclosure having a trapping section and a storage section connected thereto by a gate. The trapping section has an opening with cone-shaped guide ends connected to it. The enclosure is held with the opening facing the direction of current flow. Simulated flotsam and/or chum pots are located in a gathering area in front of the opening. Long-range directional sonic repelling devices are spaced around the gathering area so as to concentrate the fish into the gathering area. Other directional sonic devices drive the concentration of fish into the trap.

3,638,347
SINKER
Rudolph J. Kochevar, 252 Arbolada Drive, Arcadia, Calif.
Filed Jan. 22, 1970, Ser. No. 4,823
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.39 17 Claims

A sinker comprising a particulate mass of sinker composition of readily manually moldable, substantially heavy material is attachable to a fishing line assembly. The sinker composition has a generally puttylike consistency and may be of the hardening or nonhardening type. A readily deformable binder may be used with the sinker composition to hold the particles together.

3,638,348
EVERSET ELECTRIC RODENT TRAP
William J. Lusk, 9452 W. 130th St., Strongsville, Ohio
Filed Apr. 15, 1970, Ser. No. 28,863
Int. Cl. A01m *23/38*
U.S. Cl. 43—75 1 Claim

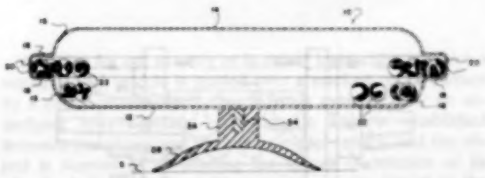


A base having an inclined forward wall, a housing mounted upon the base with a forward end of the housing extending over the inclined wall, the lower end of the housing having an access opening for a rodent, the housing containing an electric solenoid for closing together a pair of jaws against a rodent therebetween and who has been reaching toward a bait in a bait chute above the jaws, the tugged bait closing an electric switch for completing an electric circuit to the solenoid and closing the jaws.

3,638,349
OIL COMPOSITIONS CONTAINING COPOLYMERS OF ETHYLENE AND VINYL ESTERS OF C_2 TO C_3 MONOCARBOXYLIC ACID ETHYLENICALLY UNSATURATED
Max J. Wisotsky, Edison, and Harold N. Miller, Millington, both of N.J., assignors to Esso Research and Engineering Company
Filed Apr. 1, 1968, Ser. No. 717,914
Int. Cl. C10l *1/14*
U.S. Cl. 44—62 4 Claims

Copolymers of 6,500 to 50,000 and preferably of 7,000 to 15,000 number average molecular weight, comprising 3 to 40 molar proportions of ethylene per molar proportion of vinyl ester of C_2 to C_3 monocarboxylic acid are flow improvers for distillate mineral oil, e.g. middle distillate fuel oil.

3,638,350
TOY
Lyle A. Wiggen, Fort Collins, Colo., assignor to Fantastic Futures Inc., Fort Collins, Colo.
Filed Sept. 2, 1970, Ser. No. 68,955
Int. Cl. A63h *1/32*
U.S. Cl. 46—47 1 Claim



A toy of the type in which movement of a plurality of balls or marbles is controlled by manipulation of a ball-supporting surface. A hollow annular casing is supported upon a resilient pedestal with the casing axis in a normally maintained verti-

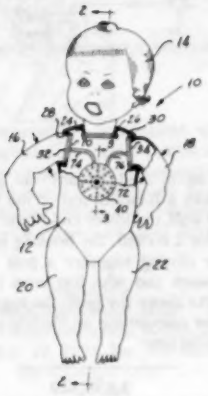
cal position. By tilting the casing upon its pedestal, balls or marbles within the casing may be set into or maintained in motion in one or more circular paths defined by annular shoulders within the casing.

3,638,351

DUAL ACTION PHONETIC DOLL

Witold W. Kosicki, Columbia, and Charles M. Hollingsworth, West Columbia, both of S.C., assignors to Horsman Dolls Inc., Columbia, S.C.

Filed Apr. 13, 1970, Ser. No. 27,861
Int. Cl. A63h 5/00
U.S. Cl. 46—117 **13 Claims**



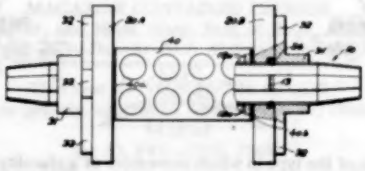
A dual action phonetic doll in which a single tweeter mechanism is actuated both by gravity when the doll is laid on its back and in response to squeezing of one or both of its arms to cause the doll to emit a cry, the character of which can be modified by varying the manner in which the arms are squeezed.

3,638,352

SPLINED SHAFT AND WHEEL RETAINED THEREON BY SPRING AND HUB ELEMENT

Godtfred Kirk Christiansen, Billund, Denmark, assignor to Interlego A.G., Zug, Switzerland

Filed Jan. 29, 1970, Ser. No. 6,718
Claims priority, application Denmark, Feb. 3, 1969, 573/69
Int. Cl. A63h 33/10
U.S. Cl. 46—23 **1 Claim**



A construction toy including a splined shaft and a wheel element nonrotatably fitting thereon and retained by a spring ring which grips the shaft. A hub element is detachably secured to the wheel, with the spring occupying a recess between wheel and hub elements to limit their movement on the shaft.

A. The Problem

Small children playing with mechanical toy building sets often have difficulties in securing pinions, pulleys, discs and similar wheel elements on shafts when building vehicles or other mechanical devices. Fastening such wheel elements on the shafts generally requires the use of tools or accessories which are difficult to handle for small children.

B. The Solution

Two essential features are required for solving this problem, and the invention consists in the combination of these features:

a. To provide a shaft having a noncircular cross section and wheel elements having a complementary hole, so as to enable the child to mount the wheels on the shaft by pushing them thereon from one end, thereby fixing the wheels on the shaft so as to prevent relative rotational movement.

b. To provide a frictional fit between the shaft and the wheels so that axial displacement can only be effected by overcoming the friction therebetween. To this end a cylindrical recess is provided in the wheel element surrounding the central hole therein and an annular spring is located in the cylindrical recess in such a manner as to exert a radial pressure against the shaft, thereby increasing the frictional resistance against axial displacement of the wheels relatively to the shaft. The functioning of this spring is automatic and requires no skill or attention on the part of the user.

c. The shaft may be tapered at one end, so as to facilitate the mounting of the wheels.

d. The width of the cylindrical recess or cavity within the wheel is greater than the thickness of the spring to prevent the spring from being jammed within the cylindrical recess.

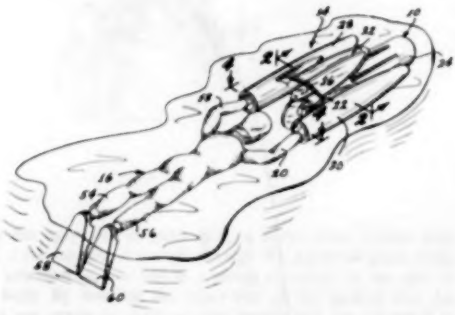
e. The cylindrical cavity or recess is closed so as to totally enclose the annular spring by means of a hub element assembled with the side of the wheel.

3,638,353

AQUANAUT TOY PROPULSION ASSEMBLY

Oldrich Fryc, Inglewood, Calif.; David T. Okada, Piscataway, N.J., and George E. Robson, Torrance, Calif., assignors to Mattel, Inc., Hawthorne, Calif.

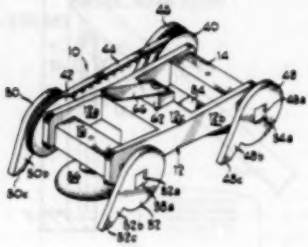
Filed Feb. 3, 1970, Ser. No. 8,279
Int. Cl. A63h 23/10
U.S. Cl. 46—92 **2 Claims**



A toy propulsion unit which pulls an aquanaut figure through the water, the figure being bendable so that it can be angled to cause the unit to dive or run in a circle. A frame for coupling the figure to the drive unit includes a pair of laterally spaced pontoon-shaped members joined together by a pair of vertically spaced connecting members, the drive unit being held between the connecting members. Each pon-

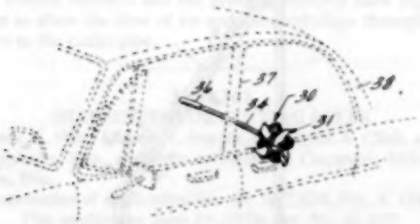
toon-shaped member has a hollow rear end for receiving a hand of the aquanaut figure, and a vertically oriented pin that traps the hand of the figure therein.

3,638,354
MOBILE TOY
Howard J. Morrison, Highland Park, Ill., assignor to Marvin Glass & Associates
Filed Aug. 8, 1969, Ser. No. 848,575
Int. Cl. A63h *11/04*
U.S. Cl. 46—132 5 Claims



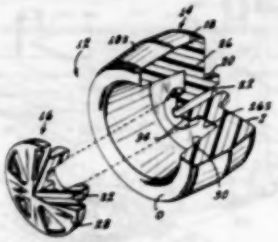
A mobile toy of the type having suction cups connected medially to tandem axles pivoted in a frame. The axles are paired together for rotation. Feet members are mounted on opposite ends of each of the axles to hold one axle against rotation while the frame pivots about the axle and the other axle pivots relative to the frame and first axle. Fingerlike prying members project forwardly and rearwardly from above and below the frame for prying the suction cups loose from the supporting surface as the mobile toy advances in an end over end fashion. The toy is particularly suited for end over end movement downwardly of a generally upright supporting surface with the movement of the toy being responsive to the force of gravity.

3,638,355
WHISTLE FOR MOVING THROUGH AIR
Carl E. Stoecklin, 4171 Homelawn Ave, Cheviot, Ohio
Filed Dec. 14, 1970, Ser. No. 97,838
Int. Cl. A63h *17/00*
U.S. Cl. 46—179 7 Claims



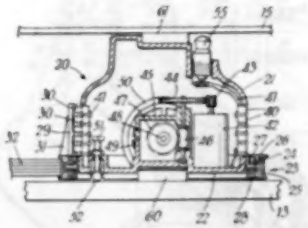
A air whistle which includes spaced annular plates, a tubular wall connecting the plates and surrounding openings in the plates, and a tubular stem mounted on one of the plates surrounding the opening thereof and extending outwardly thereof. When the whistle is drawn through the air, stem first, it emits a piercing sound.

3,638,356
WHEEL FOR A TOY CAR
Harvey W. La Branche, Palos Verdes Peninsula, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Aug. 25, 1970, Ser. No. 66,671
Int. Cl. A63h *17/26*
U.S. Cl. 46—221 7 Claims



A wheel which simulates a wide track tire with a decorative hub comprising a tire member which can receive a variety of different "mag wheels" or hubcap members. The tire member is cup shaped, with tapered inner walls for tightly receiving a hubcap member pressed therein. The hubcap member has a tubular portion which receives a protruding hub portion of the tire member as the hubcap member is pressed into place, to prevent tilting of the hubcap member.

3,638,357
MECHANISM WHICH INCLUDES AN OBJECT ARRANGED TO TRAVEL FREELY ON A SURFACE
Karl Heinz Groh, 2, 8752 Mainsschaff uber Aschaffenburg, Sandweg, Germany
Filed July 2, 1969, Ser. No. 838,399
Claims priority, application Germany, July 8, 1968, P 17 03 770.6
Int. Cl. A63h *33/26*
U.S. Cl. 46—240 10 Claims

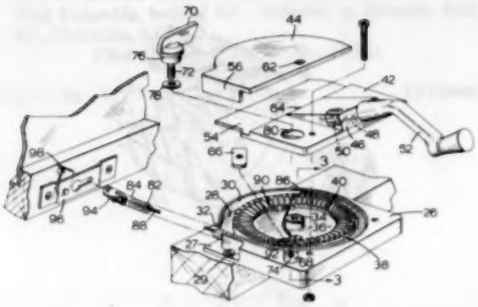


A device for use as a toy or in driver instruction in which a toy or model vehicle is guided over a marked upper surface by a motor-driven object that is freely movable over an underlying lower surface. A magnetic link is established between the object and the toy or model vehicle and the object is steered by controlling the speeds of rotation of its wheels. A flat striplike cable supplies electric power to the object and tangling of the cable is avoided by surrounding the object with a member which is rotatable relative thereto, the cable extending between said member and a fixed control panel.

3,638,358
WINDOW-OPERATING APPARATUS

Gordon A. Mason, 41 Lamont Ave., Agincourt, Ontario, Canada

Filed Apr. 30, 1970, Ser. No. 33,194
Int. Cl. E05f 11/00
U.S. Cl. 49—325 10 Claims

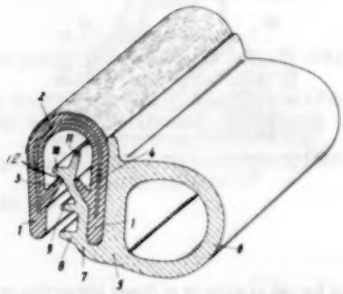


A push-pull actuator device for opening and closing windows and the like. The actuator device consists of a housing having a winding drum rotatably mounted therein and a flexible extensible member mounted on the winding drum. The flexible extensible member is in the form of a tightly coiled spring which may be stored within the housing by winding it on to the winding drum or it may extend from the housing in a straight line to open a window and hold the window in the open position.

3,638,359
PROTECTIVE SEALING STRIP

Werner Kruschwitz, Viersen/Rhineland, Germany, assignor to Draftex, GmbH, Viersen, Rhineland, Germany

Filed Mar. 9, 1970, Ser. No. 17,709
Claims priority, application Germany, July 24, 1969, P 19 38 223.1
Int. Cl. E06b 7/23
U.S. Cl. 49—490 6 Claims

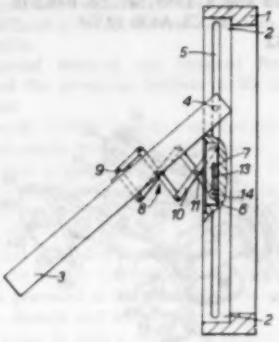


A U-shaped protective sealing strip adapted to be mounted on a support, especially for sealing doors and trunk lids of automobiles, comprising a sealing profile connected to one leg of the U-shaped sealing strip and having a portion extending about such one leg into the space between such one leg and the other leg of the U-shaped sealing strip, the profile portion being provided with holding ribs for engagement with the support.

3,638,360
PIVOT WINDOW

Dyre Vaa, 3890 Ytre Vinje, Norway

Filed May 7, 1970, Ser. No. 35,328
Claims priority, application Norway, May 19, 1969, 2040/69
Int. Cl. E05d 15/40
U.S. Cl. 49—248 2 Claims

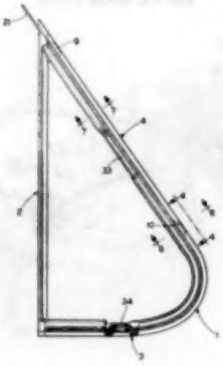


Pivot window which, at two opposing corners of the sash, preferably the two upper corners, is slidably connected to the frame by means of a groove/pivot means; a mounting on both sides of the window supporting the window sash during pivotal movement thereof beyond the frame. The mountings are arranged at the center of the frame portions which are provided with grooves, and the mountings are constituted by extendible arms which are rigidly connected to the frame and articulated to the sash. The extendible arms are effected on the lazy-tong principle.

3,638,361
RUBBER MOLDINGS FOR AUTOMOBILE WINDOWS

Herman S. Church, Cuyahoga Falls, Ohio, assignor to Teledyne Mid-America Corporation, Hartville, Ohio

Filed May 11, 1970, Ser. No. 36,342
Int. Cl. E06b 7/23
U.S. Cl. 49—479 6 Claims



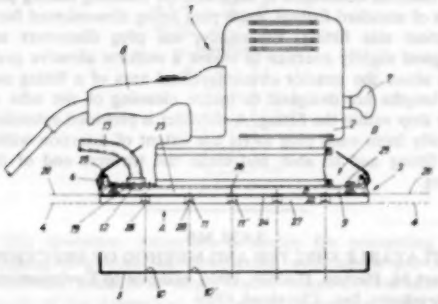
A generally triangular reinforced rubber gasket for automobile quarter vent windows having a metal reinforcing strip embedded and molded in two of the triangular gasket leg members. The diagonal reinforcing strip leg has integral offset attachment means and a bendable end tab for mount-

ing the gasket in a window frame. The reinforced horizontal gasket leg is formed with drain means and an opening for a window pivot post. The reinforced gasket has usual flanges for sealing with the window frame and also with the window glass when the latter is in closed position.

3,638,362
PORTABLE GRINDER APPARATUS

Gottlieb Stoll, Waldackerweg 58, 73 Esslingen am Neckar, Germany

Filed July 23, 1970, Ser. No. 57,643
Claims priority, application Germany, July 29, 1969, P 19 38 350.7
Int. Cl. B24b *23/00*
U.S. Cl. 51—170 MT **9 Claims**



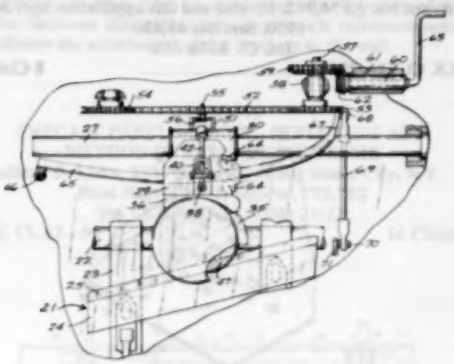
A portable grinding apparatus has a working plate movably mounted on a casing and oscillatable by a motor carried by the casing. The plate includes a top member having downwardly directed flanges and a bottom member adapted to carry on its lower surface on abrasive material and closing the open bottom of the top member. A pipe for connection to a suction device extends through the top member into the interior of the space between the top and bottom members. The bottom member and the grinding material have aligned holes to allow the flow of air and entained chips through the space to the outlet pipe.

3,638,363
SHARPENERS FOR CUTTING REELS

Wilmer E. Witt; Eugene A. Sousek, and Clyde A. Clish, all of Appleton, Wis., assignors to Koehring Company, Milwaukee, Wis.

Continuation of application Ser. No. 687,528, Dec. 4, 1967. This application June 15, 1970, Ser. No. 46,192
Int. Cl. B24b *19/00*
U.S. Cl. 51—249 **20 Claims**

A rotatable grinding disk is supported on the frame of a cutting reel for movement in a straight line, back and forth across the knife cylinder assembly. It is also supported, in conjunction with a cover, for swinging movement into and out of operative position. There is means including a cam rod and mechanical linkages for transmitting rotary motion to the knife cylinder as the grinding stone progresses axially so that all portions of the cutting edge of an angled or helical knife are presented in proper sharpening relationship to the end face of the stone. There is also means for indexing the knife

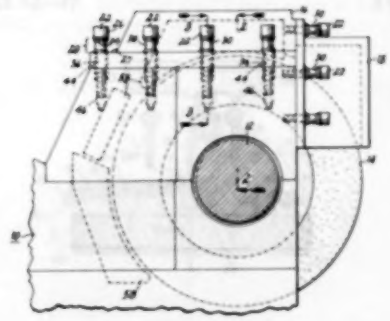


cylinder to present a new knife for sharpening after sharpening of one knife has been completed.

3,638,364
GUARD DEVICE FOR MACHINE TOOLS

George L. Grove, Cincinnati; Irving J. Stewart, Montgomery, and Lloyd W. Helson, Milford, all of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Feb. 19, 1970, Ser. No. 12,619
Int. Cl. B24b *55/04*
U.S. Cl. 51—269 **3 Claims**



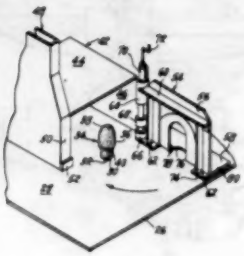
An improved cutting tool guard system utilizing a deformable spacer as an energy dissipator. The deformable spacer is placed between a cutting tool guard and rigid structure by which the guard is secured to the machine base. In the event of a sudden energy release caused by cutting tool fracture, the deformable spacer dissipates excess energy during deformation by allowing displacement of the cutting tool guard.

3,638,365

METHOD AND APPARATUS FOR FORMING FITTING COVERS

Dillard Breeding, Nashville, Tenn., assignor to Breeding Insulation Company, Inc., Nashville, Tenn.

Original application June 3, 1968, Ser. No. 734,017, now Patent No. 3,574,972. Divided and this application Apr. 30, 1970, Ser. No. 43,620
Int. Cl. B24b 1/00
U.S. Cl. 51—281 8 Claims



Abrasive means are employed to shape covers for conduit fittings from blocks of insulation material, illustratively foam plastic or fiberglas. The covers are formed in half sections and are employed in pairs; and

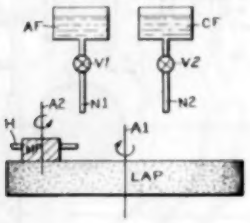
Apparatus for use in a system of forming insulation for pipe fittings such as elbow and T-sections, the apparatus including a work support and a rotatable shapping element projecting thereabove, in which a block of insulation material is moved against the shaping element in a controlled path of travel.

3,638,366

LAPPING METHOD FOR METALLIC WORKPIECES

Norman M. Gamache, Worcester, Mass., assignor to Norton Company, Worcester, Mass.

Filed Dec. 3, 1969, Ser. No. 881,867
Int. Cl. B24b 1/00
U.S. Cl. 51—326 1 Claim



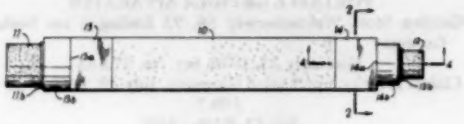
A process for providing clean lapped surfaces on metallic workpieces supported in operative relation to the working surface of a bonded abrasive lap for sliding and rotary movement relative to such working surface throughout a single continuous lapping operation including a first predetermined time period during which an abrasive slurry is supplied to the working surfaces of the lap and a second predetermined time period during which the working surface of the lap is flooded continuously with a nonabrasive cleaning fluid effective to wash clean the working surface of the lap and the lapped surfaces of the workpieces.

3,638,367

ABRASIVE PLUMBER'S TOOL

Erich A. Dreger, 32 School Lane, Cherry Hill, N.J.

Filed Nov. 29, 1968, Ser. No. 779,677
Int. Cl. B24d 15/00
U.S. Cl. 51—392 3 Claims



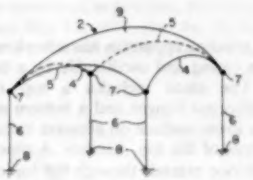
The invention is concerned with an abrasive plumber's tool for precleaning metal surfaces, particularly tubes and fittings, preparatory to soldering. The inventive plumber's tool comprises a strap of abrasive material for cleaning the end portions of tubes or pipes and having a cylindrical plug of abrasive material connected to each end for cleaning mating portions of standard fittings, each plug being dimensioned for a different size fitting. Essentially, the plug diameters are designed slightly oversize to insure a uniform abrasive pressure about the interior circumferential area of a fitting and the lengths are designed to insure cleaning of the tube or pipe stop within the fitting. A shoulder is provided extending radially from each plug to fix the extent of insertion within the fitting and to abut and clean the traverse end of the fitting.

3,638,368

INFLATABLE SHELTER AND METHOD OF ERECTION

Robert M. Pierson, Hudson, Ohio, assignor to Environmental Structures, Inc., Cleveland, Ohio

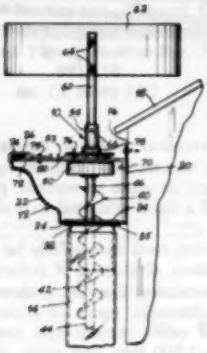
Filed Mar. 9, 1970, Ser. No. 17,675
Int. Cl. E04b 1/345
U.S. Cl. 52—2 19 Claims



A lightweight flexible inflatable shelter for enclosing large areas in applications such as greenhouses, warehouses, recreation areas and other large enclosures, and in various methods of air and water pollution control. The shelter has an envelope of lightweight, low-modulus sheet material such as stretchable fabric or plastic film having high elongation properties. The sheet material is restrained by a cable grid system having heavy-duty, longitudinal parallel cables running in one direction and lighter parallel cables running transversely across the longitudinal cables. The cable grid system is tethered to restraint cables or masts at spaced points throughout the structure to restrain the grid system and the sheet material at predetermined elevations from the ground and cause the building, when inflated, to form a plurality of substantially identical dome-shaped roof sections, with the cable grid system and the tether restraint means uniformly distributing stresses throughout the structure. The shelter may be completely assembled on the site by erecting a series of perpendicular masts, draping the cable grid system

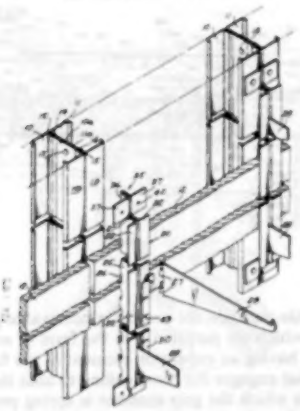
across the tops of the masts, attaching long strips of sheet material between the rows of draped cables, anchoring the ends of the cables and the sheet material to the ground and inducing internal inflation pressure into the assembled structure.

3,638,369
DEVICE FOR PREVENTING THE CLOGGING OF GUTTERS AND DOWNSPOUTS
Robert E. Albrecht, 77 Thorncliff, St. Louis, Mo.
Filed Oct. 22, 1970, Ser. No. 82,941
Int. Cl. E04d 13/00
U.S. Cl. 52—16 12 Claims



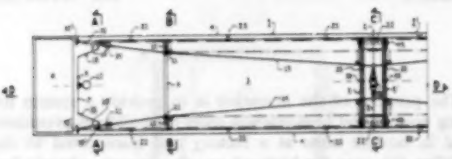
This invention comprises a device for preventing the clogging of gutters and downspouts with leaves and other debris and includes an auger means which extends into the mouth of the downspout, and means responsive to the wind for rotating the auger means within the mouth of the downspout in a direction to drive the leaves and other debris downward through the downspout.

3,638,370
FASTENING STRUCTURE FOR SECURING SUPPORT BRACKETS TO A WALL
Peter H. Miller, Newark, N.J., assignor to Evon Industries, Inc., Newark, N.J.
Filed June 24, 1970, Ser. No. 49,434
Int. Cl. E04b 1/41
U.S. Cl. 52—36 9 Claims



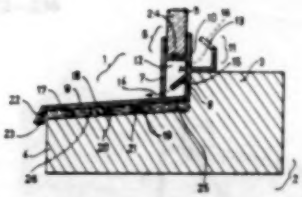
Shelf brackets having a mounting hook at one end are releasably secured to a wall constructed of spaced pairs of channeled studs secured to each other, web to web, at localized areas and spanned by wallboards by inserting the mounting hooks of the brackets into slots formed at the end of the long arm of a T-shaped spline forced between the webs. A marker attached to an end of the spline constitutes a reference point for determining the location of the slots in the spline. As these slots are concealed after insertion of the spline between the webs of the studs such reference point facilitates the attachment of the brackets to the wall.

3,638,371
PRECAST PANEL BUILDING STRUCTURE AND METHOD OF ERECTING THE SAME
Vladimir D. Liska, 2335 Broadway, Long Island City, N.Y.
Filed Nov. 6, 1968, Ser. No. 773,752
Int. Cl. E04c 3/22; E04g 21/12
U.S. Cl. 52—91 16 Claims



Disclosed are panel twins having a pair of stressed steel bars of tendons extending over the entire span of the twins and being transversely deflected to increase tension forces therein and thereby prestress the twins and a method of post-tensioning panel twins by means of adjustable couplers and turn buckles.

3,638,372
WINDOW SASH REBATE PROFILE WITH A CONDENSATE RECEPTION GUTTER
Carl Rosenthal, Willem de Zwijgerplantsoen 3, Utrecht, Netherlands
Filed July 2, 1969, Ser. No. 838,432
Int. Cl. E06b 7/14
U.S. Cl. 52—97 5 Claims



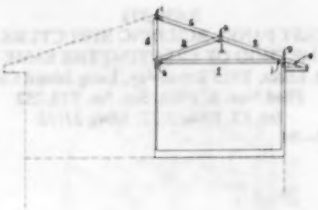
A window sash rebate profile adapted to be made from plastic material and comprising a longitudinal condensate eduction channel having parallel sidewalls supporting the window rim sash the channel bottom being continued outwardly from the channel from wall into a window frame cover plate, a condensate reception gutter being attached to the outer side of the channel backwall at a short distance below the rim sash bottom, slit-shaped apertures through said backwall just above the bottom of said gutter leading into the said channel and similar openings through the channel front wall leading to the outside above the said cover plate.

3,638,373

COLLAPSABLE ROOF FOR PREASSEMBLED BUILDING

Grosvenor Chapman, Washington, D.C., assignor to Chapman & Miller Architects, Washington, D.C.

Filed July 31, 1969, Ser. No. 846,551
Int. Cl. E04b 1/32, 7/16
U.S. Cl. 52—92 3 Claims



The purpose of the invention is to provide a system for using normal and high-pitched roofs for buildings preassembled in boxlike units at a factory and transported to the building site over the highway or other means, wherein low road clearances and other restrictions prohibit the use of assembled units exceeding a certain height and width. The invention permits the roof, which otherwise would exceed the height limitation, to be unfolded after delivery at the building site in such a manner that it will assume the desired position with a minimum of site labor. The system is not limited to any particular structural, roof deck, or roofing material nor to a building of any particular size or number of stories.

3,638,374

WALL BASE MEMBER

Bernard M. Harby, West Vancouver, British Columbia, Canada, assignor to Bernard Harby Limited, Vancouver, British Columbia, Canada

Filed Jan. 12, 1970, Ser. No. 2,170
Claims priority, application Canada, Dec. 8, 1969, 069,251
Int. Cl. E04f 19/04
U.S. Cl. 52—100 4 Claims

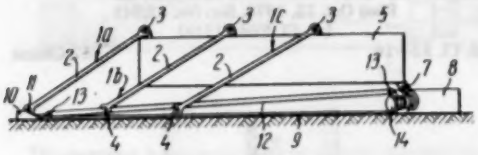
A skirting member for fitting around the base of a wall or partition comprising an elongated plastic molding having a vertical forwardly facing decorative flange, a rearwardly extending base flange and a flexible flap for concealing the cut edges of flooring material, this flap being in effect a continuation of the decorative flange. The base flange may either be attached to a floor by rivets or screws, or may be held in place by being inserted into the gap under a partition.

3,638,375

HOISTING EQUIPMENT AND METHOD OF USE

Mikhail Ivanovich Vasiliev, Varshavskoe shosse, 10, kv. 141, and Evgraf Vladimirovich Gruzinov, 3-y Nizhne-Likhoborsky proezd, 2/12, kv. 77, both of Moscow, U.S.S.R.

Filed Aug. 4, 1970, Ser. No. 60,904
Int. Cl. B66f 11/02; E04h 12/34
U.S. Cl. 52—116 6 Claims



The present invention relates to hoisting equipment, and more specifically to a method of mounting a long-size heavy object into vertical or close to vertical, position by turning this object about a fixed axle, and to a device for realizing this method.

The invention can most successfully be used for mounting into vertical position, or close to it, column- and tower-type apparatuses, transmission line and cableway supports, metal smoke and air chimneys, masts of communication means, pile drivers, and other vertical-type constructions with a weight of 1,000–1,500 tons and more, with lateral dimensions of up to 10 m. and more, and a length of up to 150–200 m. and more.

The method according to the invention provides for moving the bottom ends of frame supports in a definite succession towards the supposed axis of turn of the object to be erected, whereto the frame supports are attached by their span pieces.

The method cuts the time of erection, and permits using winches of relatively small load capacity.

3,638,376

PORTABLE PARTITION

Edward P. Howes, Hayward, Calif., and John A. Gillham, Beloit, Wis., assignors to Hough Manufacturing Corporation

Filed Jan. 5, 1970, Ser. No. 721
Int. Cl. E04b 2/72
U.S. Cl. 52—122 11 Claims

A portable partition for providing removable partitions for rooms, in which the partition is in the form of separate panel units each having an expansion element in the form of a grip member that engages the room ceiling to abut the panel units in place, in which the grip member is spring pressed against the ceiling by a spring mechanism that provides an increase in upward spring pressure as the grip member moves toward its extended position. The side rails of the panel units are of

complementary configuration so that adjacent units can be erected in edge to edge interconnected relation, with an interconnecting adapter element being employed between the grip members of adjacent panel units. The bottom rail or shoe of each panel unit is adjustable to accommodate canted floors. The grip members of the respective units are arranged to provide an upward movement on the order of 3 inches relative to the panel, with the upward spring pressure and grip member stabilization being such that the panel units have significant ability to withstand lateral loadings and accommodate seismic and/or ceiling load deflection conditions.

3,638,377

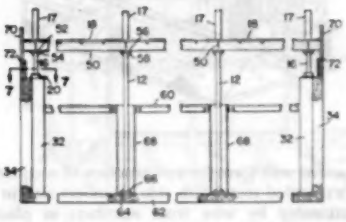
EARTHQUAKE-RESISTANT MULTISTORY STRUCTURE

Marc S. Caspe, 1809 Ralston Ave., Belmont, Calif.

Continuation-in-part of application Ser. No. 767,767, Oct. 15, 1968, now abandoned. This application Dec. 3, 1969, Ser. No. 881,810

Int. Cl. E04h 9/02

U.S. Cl. 52—167 24 Claims



An earthquake-resistant multistory structure that effectively isolates the superstructure from the ground motions during a major earthquake by permitting relative displacement between the superstructure and the foundation, the structure incorporating means which effectively control both the magnitude of the base shear force required to initiate relative displacement and the magnitude of relative displacement.

3,638,378

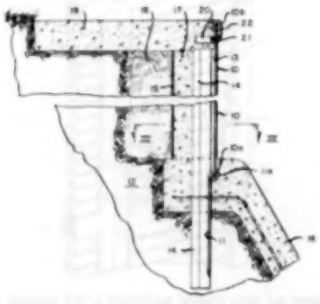
WALLED STRUCTURES SUCH AS SWIMMING POOLS

Willard J. Russ, Jr., c/o Pacific Pool and Contracting, Inc. 4761 Route 8, Allison Park, Pa.

Filed Sept. 25, 1969, Ser. No. 861,058

Int. Cl. E04b 1/18

U.S. Cl. 52—169 5 Claims



A walled structure of cast concrete is provided having a vertical sheet of flexible corrosion-resistant sheet material formed to the desired wall contour and having an exposed face surface, a series of vertical ribs on the sheet opposite the face surface, a series of spaced support members engaged in a base support having a U-shaped receptacle on the top thereof receiving the bottom edge of said sheet to hold the bottom edge in a desired selected position, a plurality of spaced vertical standards engaged in said base support and extending to a point adjacent the top edge of the vertical sheet and engaged with the ribs on said sheet and a continuous cast concrete layer surrounding the vertical sheet opposite the face surface from a point adjacent the top edge to the base support and extending beneath and engaging a portion of the lower edge of said sheet.

3,638,379

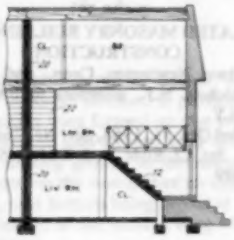
DWELLING

Thomas V. Williams, 415 Dreshertown Road, Fort Washington, Pa.

Filed May 20, 1969, Ser. No. 826,145

Int. Cl. E04h 1/04

U.S. Cl. 52—185 3 Claims



A trilevel dwelling unit comprising a monolevel residence and two bilevel residences. Each residence is connected to the exterior of the dwelling unit by a separate passageway thereby eliminating the need for a common passageway. In addition, each residence is separated from its adjacent residences by partitions of masonry construction.

3,638,380

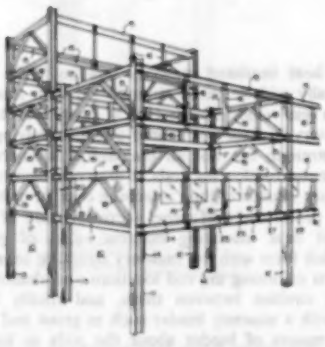
MODULAR HIGH-RISE STRUCTURE

Joseph G. Perri, New York, N.Y., assignor to Walter Kidde Constructors Incorporated, New York, N.Y.

Filed Oct. 10, 1969, Ser. No. 865,284

Int. Cl. E04h 1/04

U.S. Cl. 52—236 6 Claims



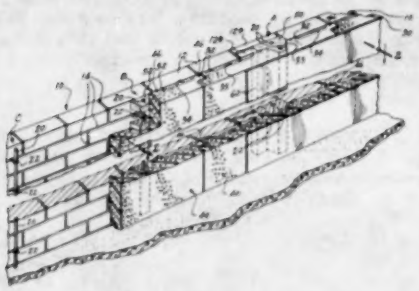
The invention is directed to new and improved structural concepts for so-called high-rise buildings, providing for op-

timum utilization of prefabricated apartment modules and providing for highly economic construction techniques and economic utilization of space. The structure is of generally peristylar form, in that all of the principal vertical support columns are located about the exterior of the structure. A unique arrangement is provided for supporting prefabricated apartment modules, comprising special horizontal support beams, extending transversely in the structure and which are supported at their ends by longitudinal beams engaging the vertical support columns. The transverse beams are so designed that their webs and flanges lie in two intersecting planes, and T-beams are ideally suited for this purpose. The prefabricated apartment modules are supported by their edges on the transverse beams, in such manner that the webs and flanges of the beams are received between very narrow vertical and horizontal clearance spaces between apartment modules. To great advantage, the longitudinal support beams of the peristylar structure are comprised of Vierendeel trusses located at alternate story levels of the structure and spanning a vertical distance of one story. The arrangement of Vierendeel trusses is structurally advantageous and has pleasing architectural characteristics.

3,638,381
INSULATED MASONRY BUILDING WALL CONSTRUCTION

Alan L. Robertson, Newington, Conn., and Arthur A. Rady-Pentek, Metuchen, N.J., assignors to BASF Corporation, New York, N.Y.

Filed Oct. 11, 1968, Ser. No. 766,794
Int. Cl. E04c *2/10;* **E04b** *1/62*
U.S. Cl. 52—309 **10 Claims**

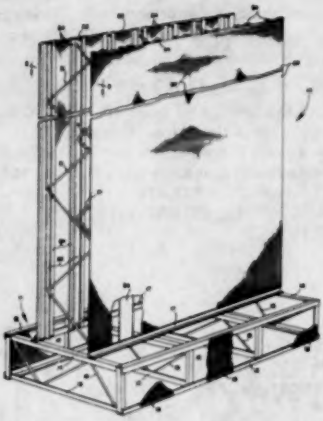


Highly heat insulated masonry building walls are made economically with required strength yet with less thickness and much less weight than a typical cavity wall by building up a masonry structure of limited thickness having the compressive strength but not all the lateral strength required; erecting metal reinforcing rods at intervals next to a side of the masonry structure; then attaching over it, as by strips of adhesive, preformed stiff panel sections made of a durable lightweight heat insulating material, e.g., of polystyrene foam, which form with the masonry structure separate vertical pockets enclosing the rod locations and shallow anticondensation cavities between them; and finally filling the pockets with a masonry binder such as grout and hardening the cast masses of binder about the rods to form in the pockets reinforcing ribs bound monolithically to the masonry structure. A new form of molded, mating insulating panel sections is provided for constructing the walls.

3,638,382
FORM FOR A CONCRETE WALL STRUCTURE

Ronald E. Merrill, 153 Terra Linda, Eugene, Oreg.

Filed Dec. 22, 1969, Ser. No. 887,175
Int. Cl. E04b *5/52*
U.S. Cl. 52—359 **2 Claims**

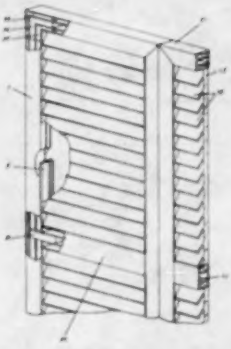


A permanent wall form for construction of a concrete wall including expanded metal lath side members tied in spaced-apart relationship by wire truss members in place intermediate the metal laths. Channels on the lath receive the inserted truss members for secure assembly of the lath side members. The lath permits migration of the concrete therethrough for subsequent smooth finishing by troweling. Provision is made for the including of insulative strips on one side of the form prior to concrete pouring.

3,638,383
LOUVER DOOR WITH FIXED LOUVER- OR LUFFER-BOARDS

Enrique Escudero Ribas, Calle Aushas March, 94-96, Barcelona, Spain

Filed Mar. 27, 1970, Ser. No. 23,384
Claims priority, application Spain, Mar. 27, 1969, 365788
Int. Cl. E06b *7/08*
U.S. Cl. 52—473 **6 Claims**



Louver door with fixed louver- or luffer-boards, made of prismatic hollow elements of plastic material, which are

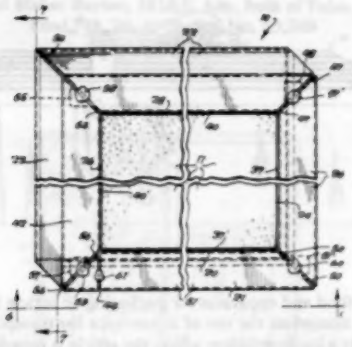
formed into door stiles and door rails defining a frame, and a number of louver- or luffer-boards located within the frame's interior joined together by means of ribs and slots.

Between the door stiles and louver- or luffer-boards are located intermediate longitudinal pieces provided with lengthwise ribs which fit, through sliding, the corresponding slots of the stiles' and louver-boards' or luffer-boards' ends.

3,638,384
STRUCTURAL CEMENT-WOOD FIBER PANEL

Charles A. Martin, Williamsville, N.Y., assignor to Martin Fireproofing Corporation, Buffalo, N.Y.

Filed Sept. 29, 1969, Ser. No. 861,578
Int. Cl. E04c *1/10, 2/10, 2/38*
U.S. Cl. 52—589 **10 Claims**

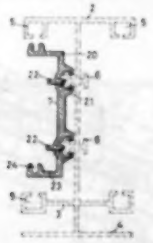


A cement-wood fiber panel comprising a body portion of substantially solid rectangular configuration having a pair of opposed faces and four edges, a grooved configuration formed in a pair of adjacent edges and a tongue configuration formed in another pair of adjacent edges, preformed metal edge members having portions which cover said edges in complementary mating relationship and have flanges thereon received in slots in the opposite faces of the body portion, and welded joints at adjacent mitered ends of the metal edge members.

3,638,385
FACADE SCREEN

Yvan M. L. C. Nobels, 80 rue Joseph Bens, and Elie P. Mas, 107 rue De Koninck, both of Brussels, 8, Belgium

Filed Jan. 21, 1970, Ser. No. 4,608
Int. Cl. E04b *2/88*; **E06b** *3/62*; **F16b** *7/18*
U.S. Cl. 52—665 **3 Claims**



A facade screen for a building which can be assembled on site. Each screen consists essentially of I-shaped vertical members, sliding supports running on fins on the vertical members, and horizontal members affixed to the supports. Both vertical and horizontal members are adapted to receive flexible seals which extend between the members and glass or other panels forming part of the screen. Assembly of the frame uses a minimum of screwed fixtures, most of the parts being sprung or slid into position.

3,638,386
SLEEVE ELEMENT AND APPURTENANT BOLT ELEMENT

Thor Waerner, Graf. Reckstr. 160, Dusseldorf, Germany

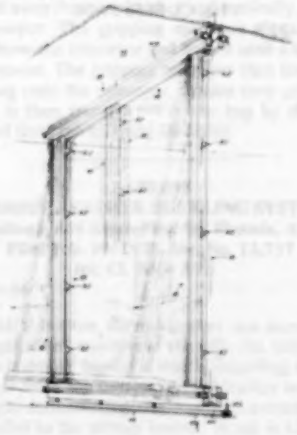
Filed Dec. 12, 1969, Ser. No. 884,608
Int. Cl. E04b *1/41*
U.S. Cl. 52—704 **1 Claim**

A universally utilizable mounting anchor, particularly for cementing into a concrete element, is provided. A bolt element having a locking wing formed on one end is insertable in a sleeve element, the said locking wing being adapted to be engaged in a locking groove in the sleeve, the locking groove being formed on the rear side of an intermediate bottom in the sleeve, said bottom being provided with an opening for through passage of the locking wing when the bolt is inserted into the sleeve.

3,638,387
METHOD OF ERECTING A WALL PANEL SUPPORTING STRUCTURE

Robert Paul Lickliter, Hamburg, and John F. Reeves, Tonawanda, both of N.Y., assignors to Flangeklamp Corporation, Buffalo, N.Y.

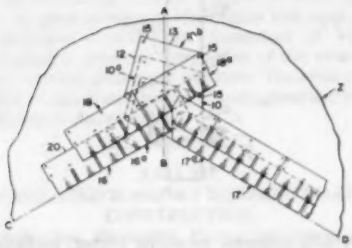
Filed Mar. 10, 1970, Ser. No. 18,073
Int. Cl. E04b *2/30, 2/60*
U.S. Cl. 52—741 **7 Claims**



A method of erecting a wall panel supporting structure formed of horizontally and vertically extending panel connector assemblies by suspending the supporting structure from a ceiling for free lateral swinging movement thereof to automatically achieve self-plumbing prior to wall panel at-

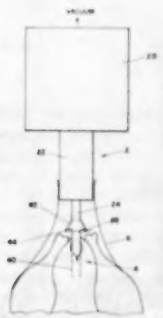
tachment. When correct plumb is achieved, an adjustable channel member connected to the lower horizontally extending panel connector assembly is lowered against the floor to provide a supporting structure accurately plumbed and positioned from ceiling to floor for receiving wall panel members.

3,638,388
METHOD OF APPLYING SHINGLES
Anthony J. Crookston, 302 Beaver St., Akron, Ohio
Filed Jan. 22, 1970, Ser. No. 4,933
Int. Cl. E04g *21/14*
U.S. Cl. 52—748 **5 Claims**



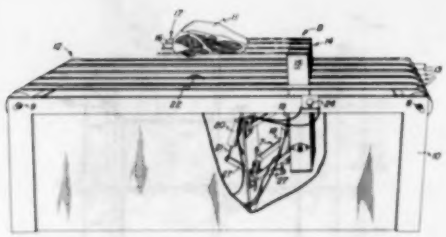
The method includes applying a vertically overlapped course of undercover shingles to the valley formed between two adjoining roof sections and then applying conventional courses of top shingles which are of shorter vertical extent than the undercover shingles to the adjacent roof sections and progressively partially covering the undercover shingles with courses of top or cover shingles whereby an improved shingle covering unit is provided for the valley formed between the roof sections.

3,638,389
PROCESS AND APPARATUS FOR VACUUM PACKAGING POULTRY
Robert Edward Sherwood, Cincinnati, Ohio, assignor to W. R. Grace & Co., Duncan, S.C.
Filed Mar. 3, 1970, Ser. No. 16,080
Int. Cl. B65b *31/06*
U.S. Cl. 53—22 B **3 Claims**



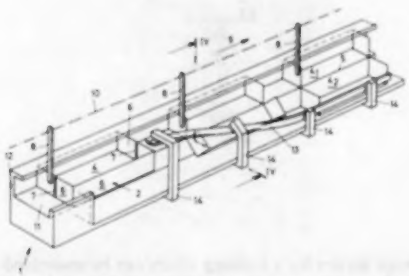
A process for vacuum packaging poultry in bags of shrinking films in which the eviscerated poultry is placed in the bag, a vacuum is created in the bag and the bag is hermetically sealed, the novel features being that a tube protruding toward the outside is inserted into the body cavity of the poultry, a vacuum is created in the body cavity and the bag by means of a vacuum device equipped with a vacuum mouthpiece, the mouthpiece is withdrawn and the bag sealed, the tube either remaining in the bag or being withdrawn together with the vacuum mouthpiece.

3,638,390
PACKAGING METHOD AND APPARATUS
Vytautas Kupcikevicius, Chicago, Ill., assignor to Union Carbide Corporation, New York, N.Y.
Filed Feb. 26, 1970, Ser. No. 14,542
Int. Cl. B65b *5/00*
U.S. Cl. 53—35 **6 Claims**



A method and apparatus for packaging an article in a flexible bag comprises the use of a conveyor for transporting the article to a loading station where the article is raised from the conveyor to a bagging position by a plurality of horizontally disposed, vertically movable fingers supporting the article. A flexible bag is placed over the article and over the fingers, the fingers are then lowered to a slack bag pulling position and thence to their initial position while depositing the bagged article onto the conveyor which removes it from the fingers and from the loading station.

3,638,391
METHOD AND DEVICE FOR INSERTING BISCUITS INTO BOXES
Rene Fluck, Neuhausen am Rheinfall, Switzerland, assignor to Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland
Filed Aug. 26, 1970, Ser. No. 67,083
Claims priority, application Switzerland, Sept. 1, 1969, 13,241/69
Int. Cl. B65b *5/10, 23/14, 23/16*
U.S. Cl. 53—35 **11 Claims**

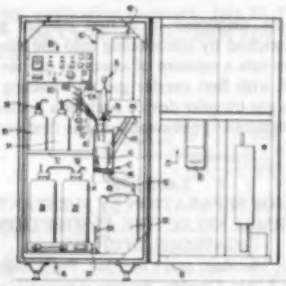


A longitudinal rectangular open box having a bottom wall and upright walls of which the end walls are vertically slit in

their center is folded downwardly about the longitudinal centerline of the bottom wall, while moved lengthwise along a horizontal guide bed so that the downwardly folded one-half of the box will have its bottom half disposed vertically and its longitudinal sidewall horizontally.

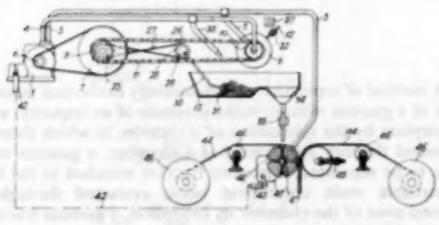
Now vertical stacks of biscuits are slidably inserted, either by hand or by feeding devices placed along the guide bed, into the upper half of the box and into the lower half of the box. Then the filled lower half of the box is folded upwardly again so that both bottom wall halves are disposed in the same horizontal plane and the box is closed by a cover, by a sleevelike wrapper, or by merely attaching an adhesive strip over the slit in the end walls.

3,638,392
AUTOMATICS SLUSH DISPENSING MACHINE
Harry Logue Welker, Jr., 3240 S. Cincinnati, Apt. 351, and Michael Blaker Burton, 3818 S. Ann, both of Tulsa, Okla.
Filed Feb. 20, 1970, Ser. No. 13,249
Int. Cl. B65b *63/08*
U.S. Cl. 53—123 **13 Claims**



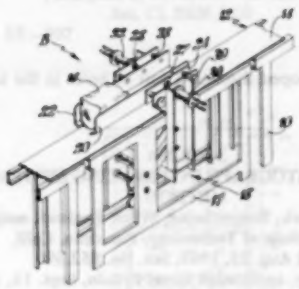
A measuring container of defined volume employs electrodes for premeasuring slush for constant volume slug discharge into an underlying vend cup. Multiple safety features are incorporated in the electronic circuitry of the completely automated coin operated dispenser to shut down operation under emergency conditions.

3,638,393
SEED HANDLING
Ranjit Kanti Datta, Reading, England, assignor to National Research Development Corporation, London, England
Filed Jan. 13, 1970, Ser. No. 2,463
Claims priority, application Great Britain, Jan. 14, 1969, 2,270/69
Int. Cl. B65b *9/04, 47/10*
U.S. Cl. 53—180 **12 Claims**



Apparatus for handling seedlike small articles, comprising: a longitudinally bored elongate member mounted at one end for cyclic movement of the other, free end around a closed path through an article supply station and past an article receiving station; valve means for selectively applying a vacuum to the bore of said member during movement through the supply station and to the receiving station whereat the vacuum is cut off from said member; and means for vibrating and applying draught over said member after movement through said supply station and before reaching said receiving station.

3,638,394
PACKAGING APPARATUS
Louis L. Winokur, Evanston, Ill., assignor to Union Carbide Corporation, New York, N.Y.
Filed Feb. 26, 1970, Ser. No. 14,538
Int. Cl. B65b *5/04, 39/02, 67/04*
U.S. Cl. 53—255 **10 Claims**



A method and an apparatus for packaging articles in flexible bags comprise the use of a conveyor for delivering an article to a gripping assembly intermediate the conveyor. The assembly comprises at least two gripping members laterally positioned on opposite sides of the conveyor and movable towards and away from each other and vertically with respect to the conveyor. The gripping members clasp the article, elevate it above the conveyor and hold it until a bag has been placed thereover. The gripping members then lower the article in the bag onto the conveyor, release their grip of the article which is then transported in the bag by the conveyor and removed from the gripping assembly.

3,638,395
STIRRUP LEATHER BUCKLING SYSTEM
Guy M. Reidhead, 406 South First St., Phoenix, Ariz.
Filed Feb. 19, 1970, Ser. No. 12,737
Int. Cl. B68c *1/16*
U.S. Cl. 54—46 **2 Claims**

A top and a bottom stirrup leather are secured against relative longitudinal movement through the utilization of a rigid buckle member having a shank extending substantially perpendicular from the bottom stirrup leather and terminating in a tongue formed integrally therewith extending approximately parallel to the stirrup leather. A tab is also provided and extends perpendicularly to the bottom stirrup leather. The top stirrup leather is provided with a plurality of regularly spaced holes aligned along a centerline thereof. The shank and tab prevent longitudinal relative movement between the stirrup leathers while the tongue maintains the two in approximate contact to prevent the shank and tab

from moving out of the holes. A leather strap is utilized to augment the tongue and is secured to the bottom stirrup

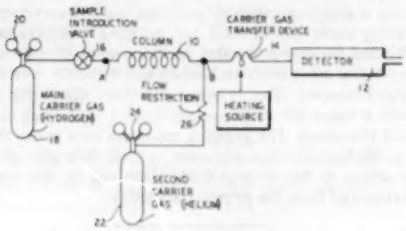
leather and is looped through a pair of holes in the top stirrup leather.

3,638,396

GAS CHROMATOGRAPH INTERFACING SYSTEM AND METHOD

James E. Lovelock, Bowerchalke, Wilts, England, assignor to California Institute of Technology, Pasadena, Calif.

Filed Aug. 25, 1969, Ser. No. 852,690
Claims priority, application Great Britain, Sept. 11, 1968, 43,260/68
Int. Cl. B01d *15/08*
U.S. Cl. 55—16 **16 Claims**



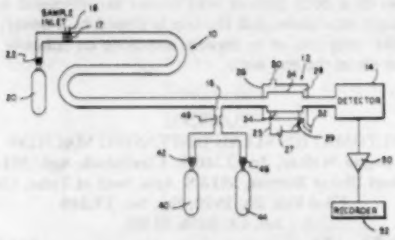
A gas-analyzing system including in sequence a chromatographic gas separator, a second carrier gas inlet, a carrier gas transfer device and a gas component detector such as a gas density balance, thermal conductivity, ionization cross section detector or a mass spectrometer. A minor amount of sample dispersed in a major amount of a first carrier gas is flowed through the chromatographic separator and the effluent from the separator mixes with the second carrier gas before entering the transfer device. The transfer device is selectively permeable to the first carrier gas and in the case of hydrogen may be a heated palladium tube. The hydrogen selectively and totally transfers through the tube and a stream enriched in a sample dispersed in the second carrier gas remains with no loss of sample.

3,638,397

GAS ANALYSIS SYSTEM AND METHOD

Kyle W. Charlton, Oxnard, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Aug. 25, 1969, Ser. No. 852,770
Int. Cl. B01d *15/08*
U.S. Cl. 55—16 **8 Claims**



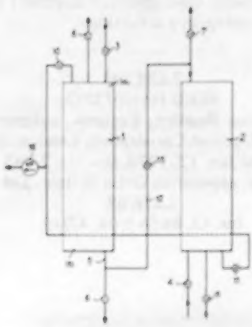
A gas sample dispersed in a first carrier gas such as hydrogen is enriched by introducing into the dispersion at a controlled flow rate a mixture of a second carrier gas such as helium diluted with first carrier gas and passing the dispersion through a gas transfer device such as a heated palladium tube which is selectively permeable to the first carrier gas.

3,638,398

METHOD OF SEPARATION BY SUBSTANTIALLY ISOTHERMAL SELECTIVE ADSORPTION OF A GASEOUS MIXTURE

Daniel Domine, Meudon, and Leon Jay, Paris, both of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des procedes Georges Claude

Filed Aug. 1, 1969, Ser. No. 846,668
Claims priority, application France, Aug. 8, 1968, 162344
Int. Cl. B01d *3/04*
U.S. Cl. 55—25 **1 Claim**



A method of separation by substantially isothermal adsorption of a gaseous mixture in the presence of an impurity, with desorption by the sole action of a vacuum, in which there is admitted through a first zone of a chamber, a gaseous mixture to be separated, a gaseous fraction enriched in the less adsorbable main constituent being extracted through a second zone of the chamber by expansion, a gaseous fraction enriched in the more adsorbable main constituent and in impurity is extracted through the first zone by the action of a vacuum, and the gaseous fraction enriched in the less adsorbable main constituent separated out during the previous cycle is admitted through the second zone.

3,638,399
PROCESS FOR THE PURIFICATION OF HYDROCARBON PYROLYSIS GAS STREAMS

David G. Walker, Baytown, Tex., assignor to Tenneco Chamicals Inc.

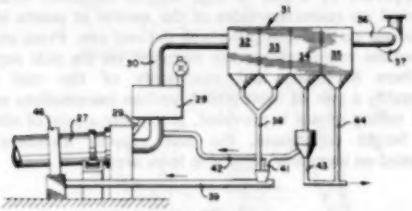
Filed Apr. 6, 1970, Ser. No. 26,062
Int. Cl. B01d 53/04; C07c 11/24
U.S. Cl. 55—59 7 Claims

Acetylene-containing pyrolysis gases are purified by contacting them with activated carbon. In this process the activated carbon adsorbs triacetylene and other polyacetylene precursors and catalyzes their polymerization and at the same time adsorbs naphthalene and other foulants that are present in the gas stream.

3,638,400
SEPARATION OF ALKALI-RICH DUST FROM CEMENT KILNS

Thorbjorn Heilmann, Copenhagen-Valby, Denmark, assignor to F. L. Smidth & Co., New York, N.Y.

Continuation of application Ser. No. 566,547, July 20, 1966, now abandoned. This application Feb. 14, 1969, Ser. No. 805,937
Claims priority, application Denmark, July 22, 1965, 31330/65
Int. Cl. B01d 46/02; B03c 3/01
U.S. Cl. 55—69 4 Claims

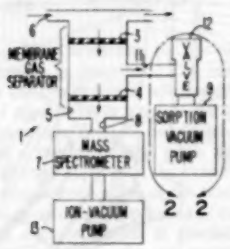


The alkali content of cement clinker is controlled by recycling a fraction of dust having a particle size larger than 5 to 15 microns recovered from the exhaust gas of the cement kiln cooled to below the precipitation temperature of the alkali.

3,638,401
VACUUM CONNECTOR FOR CONNECTING REPLACEABLE EVACUATED DEVICES TO AN EVACUATED SYSTEM

Donald J. Kabler, Fremont, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Mar. 24, 1969, Ser. No. 809,858
Int. Cl. B01d 53/22, 50/00
U.S. Cl. 55—158 1 Claim

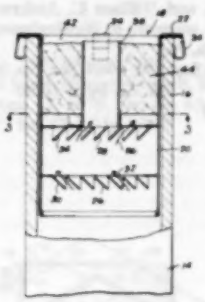


A vacuum connector is disclosed for connecting secondary replaceable evacuated devices to a primary evacuated system without contamination of the primary system. A gas passageway is connected to the primary evacuated system. A valve spring loaded to the normally closed position, is provided in the gas passageway closing same. The secondary evacuated structure, to be connected to the primary evacuated system, is sealed by means of a diaphragm. An O-ring seal is provided for sealing the secondary replaceable evacuated structure to the wall of the gas passageway. A cutting tool is provided in the gas passageway between the valve and the diaphragm for cutting the diaphragm, thereby opening same. The cutting tool also engages the valve for opening the valve against the spring bias to place the secondary evacuated structure into gas communication with the primary evacuated system through the valve. Removal of the secondary evacuated structure causes the spring bias force to close the valve, thereby sealing the primary evacuated system for subsequent connection to a second replaceable secondary evacuated device.

3,638,402
VENT FOR SOIL PIPE STACK

Clarence H. Thomas, 18240 Sycamore Ave., Roseville, Mich.

Filed June 2, 1970, Ser. No. 42,765
Int. Cl. E03f 5/08
U.S. Cl. 55—307 15 Claims



A soil pipe vent stack having a cartridge-type filter telescopically arranged within the open upper end thereof, the filter being adapted to control the emission of obnoxious gases from the vent stack.

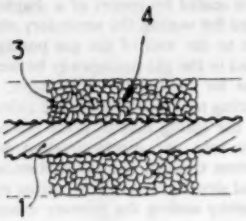
3,638,403
GAS-ADSORBING ELEMENTS, THEIR METHOD OF MANUFACTURE, AND DEVICES INCORPORATING SUCH ADSORBENT ELEMENTS

Pierre Delacour, Noyarey; Pierre Langlade, and Michel Renard, both of Grenoble, all of France, assignors to L'Air Liquide, Societe Anonyme pour l'etude et l'exploitation des procedes Georges Claude

Filed June 30, 1969, Ser. No. 837,517
Claims priority, application France, July 5, 1968, 158111
Int. Cl. B01d 53/04; B05b 7/14
U.S. Cl. 55—389 24 Claims

A gas-adsorbing element associated with a thermal source which is successively a cold source and then a hot source, and so on. The gas-adsorbent element is constituted by a ductile metallic support having an extended surface and, on at least one surface of said support, a coating of a gas-adsorbing product such as zeolite, constituted by material in the form of particles incrusted by compression between each other and on the support of ductile metal. This adsorbent element is prepared, for example by passing an aluminum tape between two cylinders of a rolling mill on which particles of

the adsorbent product are deposited by hoppers. An adsorbent element of this kind can be incorporated in a vacuum



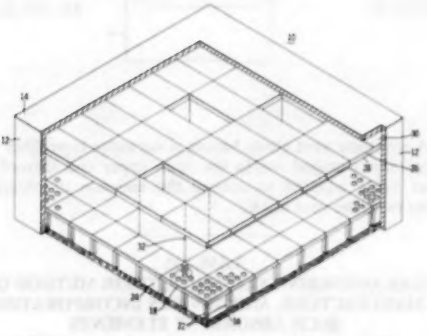
pump, in a purification device, a compressor or a refrigerator.

3,638,404

VERTICAL LAMINAR-FLOW CLEAN ROOM OF FLEXIBLE DESIGN

Charles J. Moll, and William C. Anderson, both of Grand Rapids, Mich., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 30, 1969, Ser. No. 862,430
Int. Cl. B01d *31/00*
U.S. Cl. 55—473 **6 Claims**



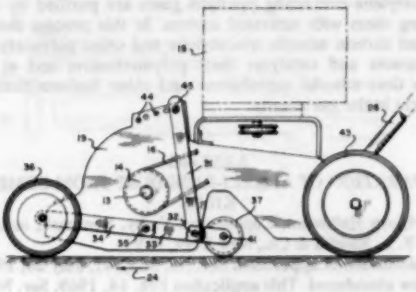
A vertical laminar-flow clean room is contained within a bounding enclosure which is substantially airtight. The clean room floor is raised and has apertures therein. The floor and the bottom of the bounding enclosure form an air-receiving plenum. A dropped ceiling is formed of an assembly of blower-hood-filter units, with the space directly above the dropped ceiling constituting an air-supply plenum. Air return plenums are contained entirely within the bounding enclosure and preferably incorporate prefilters and air-conditioning equipment, and the air return plenums connect the air-receiving plenum to the air-supply plenum. The blower-hood-filter units and air return plenums are all of a similar size, in order to facilitate a modular-type of construction and flexibility of design.

3,638,405

LAWNMOWER SUSPENSION

Hugo S. Ferguson, Averill Park, N.Y., assignor to Reel Vortex, Inc., Poestenkill, N.Y.

Filed Aug. 6, 1970, Ser. No. 61,659
Int. Cl. A01d *53/02*
U.S. Cl. 56—10.4 **7 Claims**



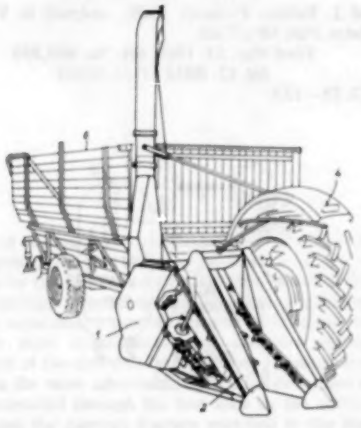
A suspension is provided for a lawnmower having a reel and blower conduit forming a crossflow blower which mows without the aid of a fixed bed knife. The front of the mower is supported by a pair of side support members rotatably mounted on respective sides of the mower at points in approximate vertical alignment with the reel axis. Front and intermediate rolling means are mounted on the side support members forwardly and rearwardly of the reel axis, preferably a pair of front wheels and an intermediate roller. Rear rolling means is provided, preferably a pair of wheels. For height adjustment, the side support members are mounted on angularly adjustable lever arms.

3,638,406

FIELD CHOPPING MACHINE ATTACHABLE TO A TRACTOR

Lorenz Scherer, Oberelchingen; Heinrich Bellan, Thalfingen; Rudolf Wohrle, Rieden, and Alfred Eggenmuller, Ulm, all of Germany, assignors to Gebruder Eberhardt, Ulm, Germany

Filed July 24, 1968, Ser. No. 747,285
Claims priority, application Germany, July 26, 1967, E 25545
Int. Cl. A01d *45/02*
U.S. Cl. 56—14.9 **14 Claims**



A field chopping machine including a chaff-cutting device

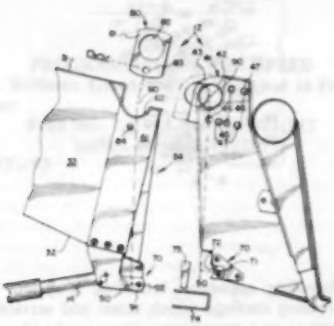
provided with feeding, pressing, cutting implements, and a pickup or receiving apparatus, said device and apparatus being of substantially the same width and attached to a tractor, oriented in the longitudinal axis thereof and disposed laterally adjacent the rear wheel of the tractor; the pickup apparatus comprises a tandem cutting assembly which is separable, horizontally arranged in operating position and upwardly pivotable to a travel position; the tractor drive means is coupled to the field chopper such as to enable attaching a wagon thereto and to operate the field chopper off the tractor drive, the total width of tractor and field chopper during travel being no more than 2.73 yards, thereby meeting public road traffic regulations for vehicles with hitched-on equipment.

3,638,407

PLATFORM KNIFE-CUTTING ANGLE ADJUSTMENT

Paul G. Togami, East Moline, Ill., assignor to International Company, Chicago, Ill.

Filed Dec. 12, 1969, Ser. No. 884,427
Int. Cl. A01d *41/02*
U.S. Cl. 56—15.6 **7 Claims**



A quick detachable apparatus for connecting a harvesting platform to its feeder housing at various angles thereto. The location of the upper coupling element carried by the feeder housing is adjustable about an underlying axis and the arcuate abutting surfaces of the lower coupling are generated about this same axis. Thus regardless of the location of the upper coupler, the abutting surfaces of the lower coupler are always aligned.

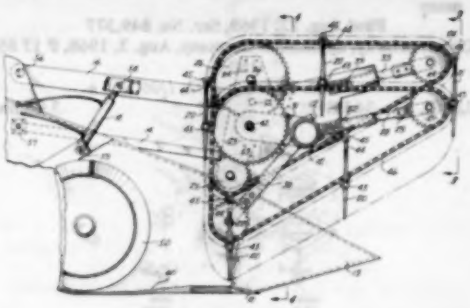
3,638,408

REEL ASSEMBLY FOR HARVESTER

Garland L. Swanson, P.O. Box 324, Ione, Oreg.

Filed Feb. 24, 1970, Ser. No. 13,439
Int. Cl. A01d *57/00*
U.S. Cl. 56—219 **10 Claims**

A noncircular reel apparatus for use with agricultural harvesting equipment is described. The reel assembly is positioned above the cutter bar of a harvesting machine header. A plurality of slats traverse a substantially triangular path to sweep the agricultural product onto the header. The slats are maintained at a predetermined pitch through the use of a crank and eccentric apparatus, the crank travelling in a path substantially congruent to that of the noncircular path of the slats. The reel apparatus is supported at each end by a pair of support arms, each of which is pivotally attached to the header at one end and to the reel mechanism at the other end, permitting the raising and lowering of the reel assembly without changing angular orientation of the reel with respect to the header. The path of the slats causes them to enter the grain or other agricultural plant being harvested and sweep them across the cutter assembly without undue shattering



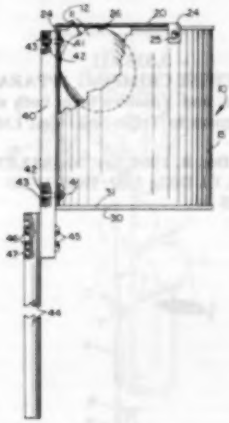
and loss of the product. Short stalked plants are prevented from falling forward out the harvesting assembly after being cut.

3,638,409

FRUIT PICKER

Henry Kuska, 2810 South Harvey, Berwyn, Ill.

Filed Aug. 12, 1970, Ser. No. 63,154
Int. Cl. A01g *19/08*
U.S. Cl. 56—339 **1 Claim**



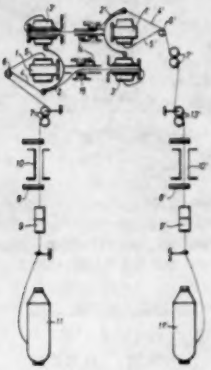
A fruit picker includes a container having an open end, a handle on the container and a slotted stripper member on the open end of the container. An individual holds the handle to raise the container into position to encompass a piece of fruit. The container is then moved laterally to cause the stem to enter the slot, whereupon the individual pulls downwardly causing the piece of fruit to bear against the interior surface of the stripper member until it becomes separated and falls into the container.

3,638,410

METHOD AND AN APPARATUS FOR THE PRODUCTION OF CRIMPED SYNTHETIC FILAMENTS

Herbert Scherzberg; Herbert Neumann; Robert Schnegg, and Theo Dietrich, all of Dormagen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 12, 1969, Ser. No. 849,377
Claims priority, application Germany, Aug. 2, 1968, P 17 85 180.8
Int. Cl. D02g *1/02, 1/06*
U.S. Cl. 57—34 HS 3 Claims



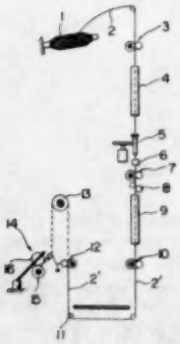
This invention relates to a method for the production of crimped endless filaments of synthetic high-molecular weight polymers by fixing the crimp by twist displacement which comprises twisting two filaments by means of a cording spindle.

3,638,411

FALSE TWIST CRIMPING APPARATUS

Kazuyuki Tsugawa, and Yasuhiro Sato, both of Matsuyama-shi, Japan, assignors to Teijin Seiki Co., Ltd., Higashi-ku, Osaka, Japan

Filed Dec. 8, 1969, Ser. No. 882,878
Int. Cl. D02g *1/02;* D02j *13/00*
U.S. Cl. 57—34 HS 4 Claims



A false twist device to impart false twist to thermoplastic synthetic filament yarn such as polyesters polyamides, etc. The yarn led from the supply package is passed through feed rollers, a first heating device, a false twist spindle, a broken yarn detector, first delivery rollers, a twist adjuster, a second heating device, second delivery rollers, and third delivery rollers, and further fourth delivery rollers if need be, and the yarn is finally led to a takeup device. The yarn thus false twisted with this false twist machine has the woollike bulkiness, stretch, and covering power to be used as the yarn for various fabrics.

3,638,412

TEXTILE MACHINE

Arthur Rebsamen, East Greenwich, R.I., assignor to Leesona Corporation, Warwick, R.I.

Filed May 1, 1970, Ser. No. 33,682
Int. Cl. D01h *9/10*
U.S. Cl. 57—52 17 Claims

Strand handling apparatus including a system for controlling a cycling carriage which scans and services bobbin winding stations on a spinning machine, or the like. The control system provides a signal indicating when a station being scanned is operational and service signals indicating when the station requires servicing. Upon receipt of both the operational and servicing signals the control system initiates a work cycle of the carriage to service the station. The service signals include both a full bobbin signal and a strand interruption signal. If there are more than a predetermined number of interruption signals during a cycle, the control system does not cause servicing of the stations responsive to this signal. If a roll-wrap occurs on a drafting roll of a station the strand is broken and does not enter the drafting rolls and the operational signal is not provided at this station so that the carriage bypasses the station until it is again placed in operational condition by an attendant. Upon starting-up with fresh bobbins at all of the stations, most of the stations would be ready to have their full bobbins doffed at about the same time, and the carriage would be overworked. Therefore, at startup the control system provides for doffing the stations in succession at timed intervals, and in conjunction with the operational and the servicing signals, to randomize the future doffing cycle of the stations.

3,638,413

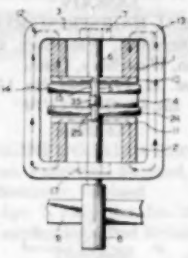
MAGNETIC FALSE TWIST SPINDLE

Josef Raschle, Oberdorf, Switzerland, assignor to Moulinage & Retorderie de Chavanoz, Chavanoz, France

Filed Aug. 17, 1970, Ser. No. 64,511
Int. Cl. D02g *3/00;* D01h *7/92*
U.S. Cl. 57—77.45 2 Claims

An improved magnetic false twist spindle comprising a tubular spindlette having a locking means for the false twist, a single driving roller attached to a driving shaft, said roller

being capable of rotating at high speeds, and annular magnets, said magnets holding the spindlette against the driving roller such that the spindlette is centered axially and laterally. The improvement resides in that the annular mag-



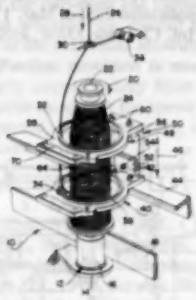
nets are coaxially located at the two ends of the driving roller and in close contact with the enveloping support of the spindle. The poles of the magnets are so located that a complete magnetic circuit results.

3,638,414
PROGRAMMED SPINDLE SPEED
David M. Williams, Greenville, S.C., assignor to Fiber Industries, Inc.
Filed Nov. 7, 1969, Ser. No. 874,742
Int. Cl. D01h *1/26, 1/36*
U.S. Cl. 57—93 **10 Claims**

An improved method and apparatus for programming the slowdown period of a yarn overend winding apparatus including draw rolls and a spindle wherein the draw roll and spindle are programmed in relationship to each other until the draw rolls reach a set predetermined low speed and then the spindle is brought to rest after the draw rolls have become stationary.

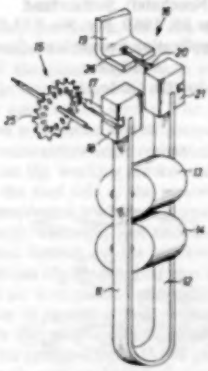
3,638,415
BALLOON BREAKER
Bernard Andrews, Johnston, R.I., assignor to Leesona Corporation, Warwick, R.I.
Filed Feb. 11, 1970, Ser. No. 10,528
Int. Cl. D01h *1/42, 7/18, 13/30*
U.S. Cl. 57—108 **6 Claims**

A ring twister having lubricated balloon control rings which facilitate handling yarns at substantially higher speeds. The rings may be of porous material for passage of the lubricant therethrough, or they may be nonporous material having



ports for passage of the lubricant to the yarn. The rings are generally applicable to spinning frames and any other equipment on which control of a ballooning strand is desired.

3,638,416
TUNING FORK DRIVE FOR CLOCKS
Klaus Kaltenbach, Triberg, Germany, assignor to Firma Jahresuhren-Fabrik GmbH, Aug. Schatz & Sohne, Triberg, Black Forest, Germany
Filed Apr. 13, 1970, Ser. No. 27,470
Claims priority, application Germany, Apr. 29, 1969, P 19 21 795.9
Int. Cl. G04c *3/00*
U.S. Cl. 58—23 TF **8 Claims**



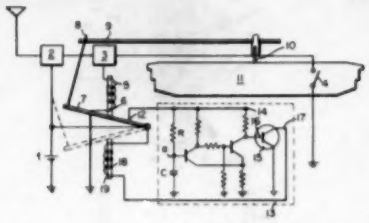
A timepiece is provided with a drive mechanism comprises a tuning fork having an electromagnetic oscillator located between the bight thereof, energized by an electronic amplifying system connected to a battery source of current. One tine of the tuning fork is magnetically connected to a spoked gearwheel forming in combination therewith an escapement mechanism for the timepiece. The other tine is provided with a permanent magnet extending transversely to the direction of oscillation and which cooperates with a magnetic polar piece to create an isochronous compensator for the tuning fork.

3,638,417

TIMEPIECE WITH AN AUTOMATIC HAND-SET MECHANISM BY STANDARD TIME ANNOUNCEMENT

Yoshiyuki Hirose, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Siekosha, Tokyo, Japan

Filed Mar. 5, 1970, Ser. No. 16,807
Claims priority, application Japan, Mar. 17, 1969, 44/19626
Int. Cl. G04c *13/08, 9/02*
U.S. Cl. 58—26 5 Claims



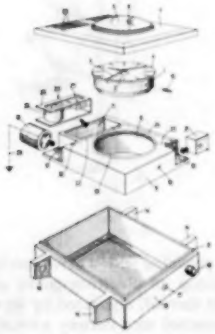
The present invention relates to a timepiece which is automatically corrected by responding to the standard time announcement on radio, television, etc., every hour at "zero" time. In the invention, the timepiece is previously adjusted to be slightly fast. As soon as the radio set receives a standard time signal, a stopper stretches out at a certain point i.e., at the point of 30 seconds) on the dial and the second hand in motion stops against this stopper at the point. On the other hand, the stopper is released by means of an electronic timer at a certain time interval (30 seconds) after said radio set receives a standard time signal and the second hand starts at the correct time.

3,638,418

ALARM WRISTWATCH

Paolo Spadini, 88, Avenue Leopold-Robert, La Chaux-de-Fonds, (Canton of Neuchatel), Switzerland

Filed June 16, 1969, Ser. No. 833,596
Claims priority, application Switzerland, June 17, 1968, 8968/68
Int. Cl. G04c *21/34*
U.S. Cl. 58—57.5 15 Claims



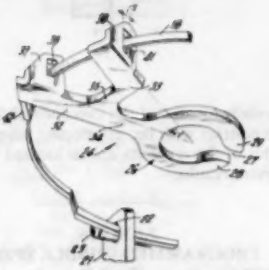
The alarm device of the watch comprises a switch controlled by the watch movement for switching on the alarm at the desired time. This switch is mounted directly on the watch movement coaxially to the watch hands. The remaining elements of the alarm device (buzzer, battery, switch, interrupter, setting mechanism) are all together carried by a supporting member arranged for receiving the watch movement and holding it firmly within the watch case.

3,638,419

HOROLOGICAL HAIRSPRING REGULATOR

Gunther Rudolph Diersbock, Waterbury, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed Mar. 22, 1971, Ser. No. 126,741
Int. Cl. G04b *17/14*
U.S. Cl. 58—109 6 Claims



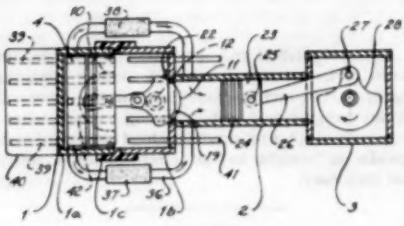
A horological instrument includes an oscillator assembly and a hairspring. The hairspring is fastened at one end to the oscillator assembly and is anchored to the frame or bridge at its opposite end. A regulator includes two spaced apart arms having slots which surround the hairspring. The regulator is designed to impart a positive isochronism characteristic to the hairspring in order to permit synchronizing of the balance wheel motor. The frequency of balance oscillation is thus made dependent on amplitude of oscillation.

3,638,420

THERMAL ISOLATION FOR STIRLING CYCLE ENGINE MODULES AND/ MODULAR SYSTEM

Donald A. Kelly, 5806 67th Place, Maspeth, N.Y., and James J. Hladek, 35 Avenue A, New York, N.Y.

Filed Oct. 19, 1970, Ser. No. 81,876
Int. Cl. F03g *7/06*
U.S. Cl. 60—24 5 Claims



The Stirling cycle engine module is a conventional single cylinder, twin-piston displacer-type engine, with the addition of a rotary valve/crankdisc which times and isolates the thermal phases of the cycle, so that effective thermal separation is maintained for maximum operating effectiveness.

Multiple hot and cold conduction threaded rods are uniformly placed within the respective displacer zones for more effective heat transfer.

A modular system is adopted of ganging individual engine modules into a custom power package, to suit various applications. Each module is secured in a cradle frame with each fly wheel drive gear meshing with pinions on a common drive shaft extension.

An evaporative cooling arrangement is included for more effective heat sinking and reduced cooling surface area.

A "V" engine module type is described which features thermal isolation techniques as an alternate engine modular system.

3,638,421

ENGINE INSTALLATIONS

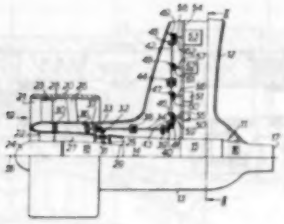
John Alfred Chilman, Painswick, England, assignor to Dowty Rotal Limited, Gloucester, England

Filed Apr. 7, 1970, Ser. No. 26,214

Claims priority, application Great Britain, May 3, 1969, 22,682/69

Int. Cl. F02c *7/20*

U.S. Cl. 60—39.31 **9 Claims**



An engine installation including an engine, a hollow supporting strut connected to the engine and at least one accessory unit mounted within the hollow strut and drivable by power takeoff means from the engine.

3,638,422

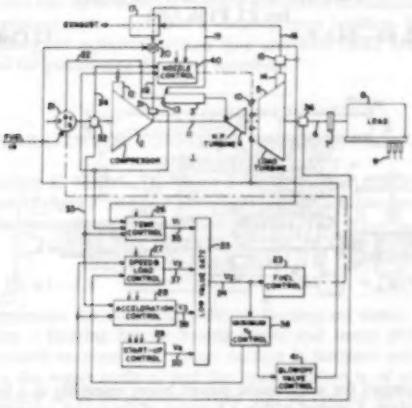
TWO-SHAFT GAS TURBINE CONTROL SYSTEM

Arne Loft, Scotia, and Daniel Johnson, Schenectady, both of N.Y., assignors to General Electric Company

Filed June 26, 1970, Ser. No. 50,286

Int. Cl. F02c *9/08;* **B63h** *3/10*

U.S. Cl. 60—39.28 **6 Claims**



In a two-shaft gas turbine having an adjustable nozzle between the compressor high-pressure turbine and the load turbine, a control system is provided in which a biasing signal is added to the fuel temperature control increasing its base reference so that on an increase in called for speed or load the gas turbine is able to dynamically respond in an improved manner. The steady-state temperature limits are exceeded transiently without damage to the gas turbine until the system returns to its new steady-state condition.

Also provided for the two-shaft gas turbine is an acceleration limiting control whereby the overall gas turbine is allowed to accelerate at the maximum allowable value of either of the two shafts. Further provision is made for a blowoff valve control whereby excess energy from a regenerator is diverted from the turbines so that the speed and load control will remain in command, thus preventing overspeed conditions and/or subsequent shutdown.

3,638,423

PNEUMATIC TOOL

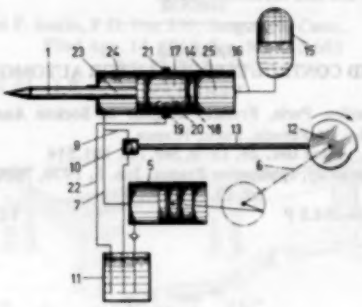
Willem Jan Van Heijst, Delft, Netherlands, assignor to N.V. Industriele Handelscombinatie, Netherlands

Filed Apr. 22, 1970, Ser. No. 30,833

Claims priority, application Netherlands, Apr. 24, 1969, 06350

Int. Cl. F15b *1/02*

U.S. Cl. 60—51 **3 Claims**



A reciprocatory pneumatic tool has a positive displacement pump for introducing a constant volume of liquid into the tool side of the piston upon each return stroke, and a valve operated in timed sequence with the pump for exhausting liquid upon each return stroke. The air on the opposite side of the piston is confined and of constant quantity, so that when the tool encounters high resistance, the tool will not advance as far on the working stroke and liquid will tend to accumulate on the tool side of the piston and the air will be more greatly compressed to deliver a more powerful working stroke. Conversely, when the tool encounters less resistance, the tool advances farther on the working stroke and more liquid is pumped out than is pumped into the cylinder, so that the compressed air is expanded and delivers a less powerful stroke. The force of impact is thus automatically adjusted in accordance with the resistance encountered. In a modification, liquid can be pumped through the piston one way in the direction of the air, and an outlet port normally covered by the piston can be exposed when the piston moves too far in either direction.

3,638,424

DEVICE FOR DRIVING A HUB IN CONTINUOUS UNIDIRECTIONAL ROTATION BY MEANS OF RECTILINEAR TOOTHED RACKS

Alfred Valantin, Oise, France, assignor to Charbonnages De France, Paris, France

Filed Dec. 1, 1970, Ser. No. 94,083

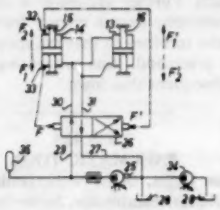
Int. Cl. F03c *1/06*

U.S. Cl. 60—51 **7 Claims**

A device for driving a hub in continuous rotation in one single direction by means of two rectilinear actuating racks

which have alternating rectilinear movements simultaneously in opposite directions and of two alternately rotating driving members coupled to the hub when they rotate in a given direction.

Each driving member is provided with a curved tooth rack continuously engaging with one of the rectilinear actuating



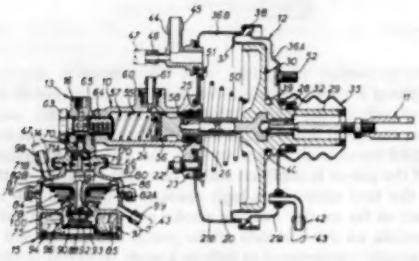
racks s while two rectilinear synchronizing racks are each rigidly fixed for translation to one of the actuating racks and are simultaneously and continuously engaged with a toothed synchronizing pinion having an axis of rotation fixed with respect to the said rectilinear racks.

3,638,425

ASSISTED CONTROL ESPECIALLY FOR AUTOMOBILE VEHICLES

Jean Maurice, Paris, France, assignor to Societe Anonyme Francaise Du Ferodo, Paris, France

Filed Dec. 28, 1970, Ser. No. 101,514
Claims priority, application France, Jan. 5, 1970, 7000121
Int. Cl. F15b 7/00
U.S. Cl. 60—54.5 P **7 Claims**



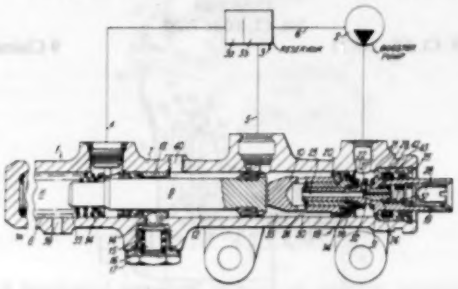
A device for the assisted control of two braking or declutching circuits having independent master cylinders, especially for automobile vehicles, of the kind comprising an operating pedal, at least one master cylinder in which a master piston is adapted to slide under the action of said operating pedal, an assistance cylinder in which slides a piston coupled for movement, at least unidirectionally, to said master piston, means for applying pressures on the two faces of said assistance piston, and a piloting valve which, when at rest, ensures equality of the pressures applied to the two faces of the piston of said assistance cylinder and which, responsive to the movement of said operating pedal, ensures an unbalance between said pressures so as to permit the piston of said assitance cylinder to act on said master piston. In this device, each of said braking circuits is associated with an independent master cylinder arranged parallel to the master cylinder of the other braking circuit, the assistance cylinder being disposed between said brake pedal and said master cylinders, a distribution compensating bar is provided in said assistance cylinder and is interposed between the master pistons of said master cylinders and the piston of said assistance cylinder, said piloting valve being controlled by a pressure equal to the pressure existing in at least one of said braking circuits.

3,638,426

POWER ASSISTED BRAKE

Juan Belart, Walldorf, Germany, assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Feb. 13, 1970, Ser. No. 11,045
Claims priority, application Germany, Feb. 25, 1969, P 19 09 399.3
Int. Cl. F15b 7/00
U.S. Cl. 60—54.6 P **3 Claims**



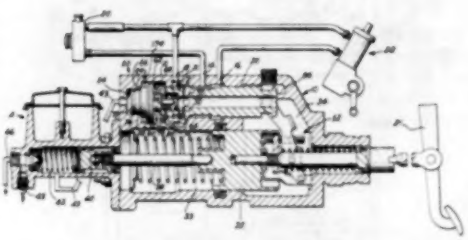
A power assisted brake of the type in which a booster pump supplies brake fluid to a booster chamber between the master cylinder piston and the actuator to supplement the brake pedal effort including an easily removable booster valve subassembly comprising a movable part which is slidable in a control sleeve to provide throttling of the flow from the booster chamber to the system reservoir.

3,638,427

SPOOL VALVE CONTROL FOR A HYDRAULIC POWER BOOST

Robert E. Meyers, South Bend, Ind., assignor to The Bendix Corporation

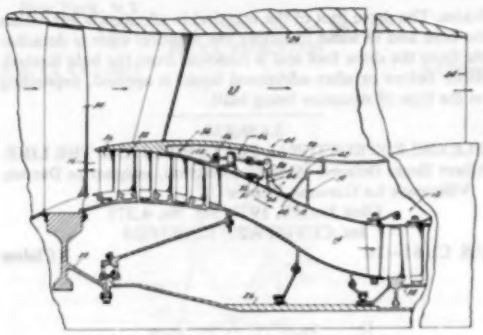
Filed Apr. 27, 1970, Ser. No. 32,241
Int. Cl. F15b 7/00
U.S. Cl. 60—54.6 P **12 Claims**



A control for a hydraulic power boost assembly in a braking system. Located within a housing of the boost assembly is a control piston which has a projection extending therefrom for abutting a spool valve in a valve chamber. The spool valve is responsive to movement of a brake pedal and regulates hydraulic fluid pressure to move a power piston which

activates the master cylinder which in turn supplies fluid pressure to the wheel cylinders of a vehicle. The control piston is a stepped diameter piston which has one end thereof exposed to the fluid pressure in the master cylinder and the other end thereof exposed to the fluid pressure acting on the power piston. Upon manual activation by the brake pedal, the fluid pressure from the master cylinder moves the stepped control piston into engagement with the spool valve thereby preventing it from moving until the brake pedal is released. Such an arrangement prevents sudden surges of hydraulic fluid to the power piston in the power chamber which would cause an abrupt stop of the vehicle.

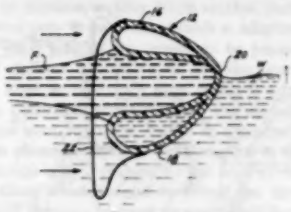
3,638,428
BYPASS VALVE MECHANISM
Gerald E. Shipley, and Robert R. Girard, both of Cincinnati, Ohio, assignors to General Electric Company
Filed May 4, 1970, Ser. No. 34,071
Int. Cl. F02k *3/04*; **F04d** *27/02*
U.S. Cl. 60—226 **8 Claims**



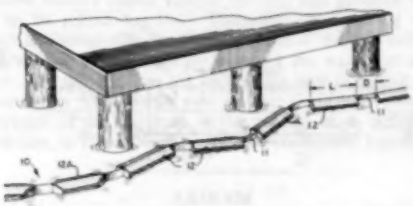
A bypass valve arrangement for a gas turbine engine having two independently rotatable axial flow compressors arranged in serial flow relationship along a common flow passage, the valve arrangement includes a plurality of bypass passages opening to the flow passage intermediate the compressors. Each bypass passage is provided with a hinged valve member which is movable between a closed position, wherein the valve member forms a streamline continuation of the passage outer wall, and a variably open position. Means including an actuator, unison ring and bellcranks are provided for positioning the valve members.

3,638,429
APPARATUS FOR CONFINING MATERIAL FLOATING ON WATER
Theodore E. Sladek, La Mesa; John E. Palmer, Santa Ana, and Michael F. Steele, Costa Mesa, all of Calif., assignors to The Susquehanna Corporation, Fairfax, Va.
Filed May 18, 1970, Ser. No. 38,111
Int. Cl. E02b *15/04*
U.S. Cl. 61—1 F **8 Claims**

Apparatus for confining material floating on water, comprising a floating barrier having upper and lower pivotally connected sections. The upper section is buoyant and thus seeks the water surface, and the lower section is of neutral buoyancy so as to provide ballast and to remain below the surface of the water. A restraint strap is connected to the upper and lower sections to limit the relative movement therebetween. In operation, when there is an upward movement of the water surface, the upper section pivots upwardly to seek the water surface and the lower section remains below the water surface, thereby preventing the floating material from moving over or under the barrier. The restraint strap limits the movement of the upper section from a substantially horizontal position adjacent the lower section to a substantially vertical position when subjected to wave motion.



3,638,430
HIGH-STRENGTH FIRE-RESISTANT SPILL CONTROL BOOMS
Millard F. Smith, P.O. Box 295, Saugatuck, Conn.
Filed Apr. 14, 1969, Ser. No. 815,663
Int. Cl. E02b *15/04*
U.S. Cl. 61—1 F **9 Claims**

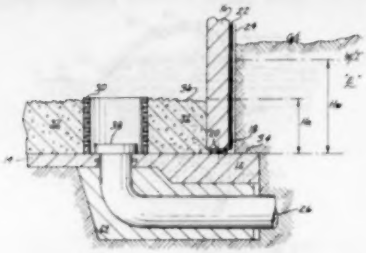


Rugged high-strength fire-resistant floating booms, each incorporating a continuous flexible fin suspended at and extending below the surface of a body of water, supported by short floats formed of highly fire-resistant material, such as foamed aluminum blocks, spaced apart longitudinally along the upper edge of the fin to permit flexing and accordion folding of the structure and to provide flexible articulating movement with surface waves; all parts of each spill control boom being formed of highly fire-resistant and high-strength materials substantially impervious to impact, bending or snagging between vessels, docks, pilings and similar structures, and optionally incorporating resilient fender materials protecting the hulls of adjacent vessels and barges as well as docks and pilings from impact damage, while retaining spilled petroleum products or other floating materials discharged from a dockside vessel in the immediate vicinity of the spill, and preventing the movement of such spilled material under docks and other structures.

3,638,431
STORAGE TANK
Charles P. Shelander, Dix Hills, N.Y., assignor to Preload Company, Inc., Garden City, N.Y.
Filed Feb. 19, 1970, Ser. No. 12,753
Int. Cl. B65g *5/00*
U.S. Cl. 61—.5 **3 Claims**

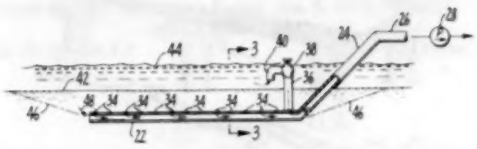
A storage tank for storing liquid is adapted for construction in soil having a high-water table. The tank has sidewalls

and a floor with the upper level of the floor being set below the height of the water table in the soil. To stabilize the tank



and counter the effect of the uplift of the water in the soil, a ballast voided fill is placed within the tank.

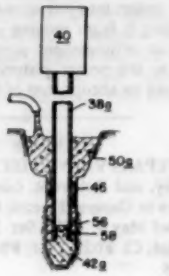
3,638,432
STATIONARY DREDGING APPARATUS
Townsend L. Schoonmaker, 265 Summit Ave., San Rafael, Calif.
Filed Apr. 28, 1969, Ser. No. 819,715
Int. Cl. E02b *3/02*; **E02f** *5/28*
U.S. Cl. 61—2 **10 Claims**



This application discloses apparatus for removing sand and other sedimentary materials from waterways and other submerged locations comprising a generally horizontal perforated pipe extending across the bottom of the waterway and connected to a suction pump above the water level with a high-volume clear water supply conduit entering the perforated conduit near the perforations closest to the pump. The clear water supply may be provided by a suction apparatus or a pressure apparatus, and where the perforations are provided in the bottom of the perforated pipe, the pipe may dig its own channel in the bottom of a waterway.

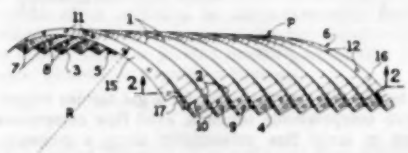
3,638,433
METHOD AND APPARATUS FOR FORMING STRUCTURES IN THE GROUND
James L. Sherard, 70 Hillcrest Road, Berkeley, Calif.
Filed Mar. 28, 1969, Ser. No. 812,574
Int. Cl. E02d *3/12, 5/34, 5/72*
U.S. Cl. 61—11 **14 Claims**

A method for making an elongated liquid-filled hole extending downwardly in the ground which may be used in the construction of foundation piling, water wells, sand drains, tension anchors and related installations, the method comprising generally the steps of providing a rigid, elongated drive member or mandrel having a drive foot on its lower end; forcing the mandrel drive foot through and displacing the soil to form a space with a cross-sectional area greater than the mandrel stem in the wake of the drive foot; and simultaneously filling this space with a preselected liquid supplied at the ground surface, the liquid thereby flowing downwardly with the mandrel behind its drive foot. For some embodiments of the invention, the liquid is left in the hole formed where it becomes part of the body of the completed structure, such as in cast-in-place concrete piles or sand



drains. The drive foot of the mandrel in all cases is left within the hole and in some instances the mandrel stem is detachable from the drive foot and is removed from the hole formed, either before or after additional liquid is applied, depending on the type of structure being built.

3,638,434
FLEXIBLE STRUCTURAL PLATE PIPES AND THE LIKE
Albert Henri Delaere, Waterloo, Belgium, assignor to Davum, Villeneuve La Garenne, France
Filed Jan. 20, 1970, Ser. No. 4,371
Int. Cl. F16l *9/22*; **E21d** *11/20*
U.S. Cl. 61—16 **8 Claims**



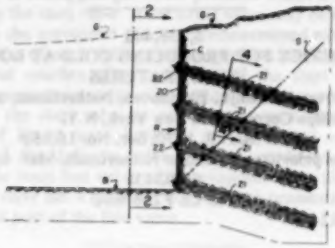
A curved quadrilateral corrugated plate for constructing flexible segmented curved-section structures such as structural plate pipes. The plate comprises on each of its four edge portions assembly apertures which are formed in the flanks of the corrugations. The positions of the apertures on the flanks are such that when two identical plates are assembled by overlapping their edge portions, all the pairs of apertures of the plates are respectively in coaxial superimposed relation to each other.

A flexible curved-section segmented structure comprising an assembly of said corrugated plates is disclosed.

3,638,435
METHOD FOR THE CONSTRUCTION OF A RETAINING WALL
Edward E. Mason, 314 Marine Bldg., Vancouver, III, British Columbia, Canada
Filed Apr. 1, 1970, Ser. No. 24,510
Int. Cl. E02d *5/18, 5/36*
U.S. Cl. 61—39 **7 Claims**

A retaining wall for supporting the embankment of a cut excavation. The wall structure consists of a skin of concrete, an array of rows and columns of dowels or tendons extending from the skin into the cut embankment and rows of wale beams at the juncture of dowels and the face of the skin tying the components together. The retaining wall is built as the cut proceeds. A cut to a selected depth is covered by a skin

of pneumatically applied concrete. The dowels are formed as reinforcing, grout-filled boreholes and the wale beams are



formed as reinforced concrete members pneumatically sprayed against the skin.

3,638,436

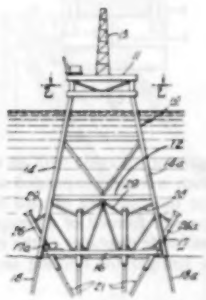
REVERSED SLOPE SKIRT PILE MARINE PLATFORM ANCHORING

Ivo C. Pogonowski, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Oct. 17, 1969, Ser. No. 867,244

Int. Cl. E02b *17/00*

U.S. Cl. 61—46.5 **6 Claims**



The invention relates to a marine platform for supporting a deck or a similar working structure above the water's surface at an offshore location. The platform includes an uprightly positioned support jacket that extends to the sea floor, having anchoring means at the lower end for fixedly positioning the jacket in place. The anchoring means is so arranged with respect to the jacket to firmly locate the latter even though the anchoring substratum be underconsolidated, or characterized by generally poor holding ability. Said anchoring means embodies a series of peripherally located skirt piles that are sloped inwardly at an angle toward the support jacket interior to increase the resistance of the jacket to being displaced or upset from a vertical disposition. Lateral storm loads imposed against the jacket are thus transferred to the foundation strata by axial pile loads only. Safety, stability against overturning and total collapse of the entire marine structure is thereby improved.

3,638,437

FLOATABLE CASTING FOR WORKING ON HULL STRUCTURES BELOW WATER LEVEL

Shozo Fukuda, Nagasaki, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

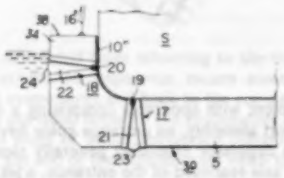
Filed Dec. 12, 1969, Ser. No. 884,757

Claims priority, application Japan, Dec. 13, 1968, 43/91445

Int. Cl. B63c *1/02*

U.S. Cl. 61—64 **6 Claims**

A floatable casing which is adapted to be positioned around two hull sections of a vessel to be joined while they are in the water includes two sections or portions which are hinged together centrally and each of which includes a plurality of tanks which are adapted to be filled or emptied of sea water for the purposes of floating them, or positioning them in place around the bottom and sides of a hull section to be welded to another section. Each section includes a vertically elongated tank at each side which is adapted to extend upwardly on each side of the vessel to be joined together. Each section defines a continuous beltlike working space preferably at least as high as a man which is adapted to be enclosed in a watertight manner when the device is applied around the hull sections to be joined in a manner such that the separation plane of the hull sections lies in the working space. The device is first floated to the area of the two hull sections and then is submerged by filling the tanks at each end to cause the sections to pivot to an opened form and permit them to be inserted below the bottom of the vessel sections. The sections are moved together and the tanks of the



casing structure are then ballasted to give sufficient buoyancy to the device to cause it to bear with resilient water proof portions thereof tightly against the two hull portions which are to be joined together. Thereafter the working space which is aligned with the dividing plane of the two hull sections is freed of sea water by pumping the water out of the space. The side sections are sufficiently high to permit entry of workmen from either side of the vessel and complete movement of the workmen in the passage space defined by the device, to effect the joining of the vessel parts together.

3,638,438

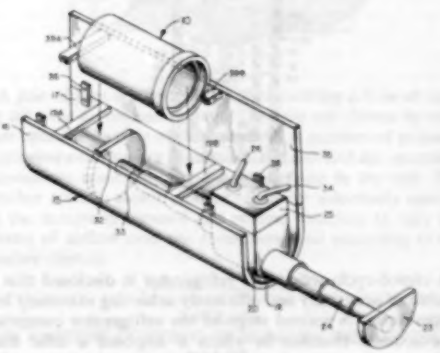
TRENCH-FORMING, PIPELAYING AND TRENCH WALL SUPPORTING MACHINE

Walter F. Kinnucan, Jr., 140 Blackstone, La Grange, Ill.

Filed Mar. 24, 1970, Ser. No. 22,334

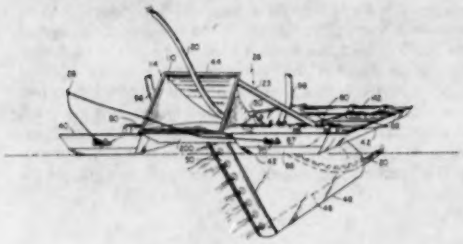
Int. Cl. F16l *1/00*; **E21d** *11/00*

U.S. Cl. 61—72.1 **6 Claims**



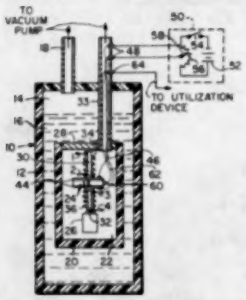
A generally U-shaped body has a pump mounted near one end to displace a digging plate having a semicircular profile. This produces a trench with a semicircular bottom, shaped to receive and support a pipe section of approximately the same radius as the radius of the curved trench bottom.

3,638,439
EMBEDDING CABLELIKE MEMBERS
Otto C. Niederer, Old Lyme, Conn., assignor to Aqua-Tech, Inc., Norwick, Conn.
Filed Mar. 16, 1970, Ser. No. 19,853
Int. Cl. F16l 1/00; E02f 5/02
U.S. Cl. 61—72.4 18 Claims



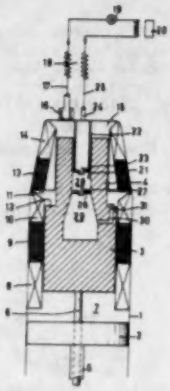
Cable embedment with apparatus comprising a water bed contacting support assembly, an entrance guide having a longitudinal axis, a depressor extending generally along a continuation of the axis rearward of the entrance, a jet assembly extending beneath the depressor, and, connected to the jet assembly, a source of fluid under pressure for creating a jet flow at a flow rate sufficiently high and a pressure sufficiently low to temporarily liquify water bed soil in the path of the cable without substantial permanent soil displacement.

3,638,440
CLOSED-CYCLE ELECTROCALORIC REFRIGERATOR AND METHOD
William N. Lawless, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Nov. 20, 1970, Ser. No. 91,445
Int. Cl. F25b 21/02
U.S. Cl. 62—3 22 Claims



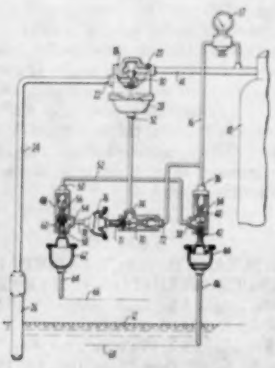
A closed-cycle solid state refrigerator is disclosed that is capable of accurately and efficiently achieving extremely low temperatures. A second stage of the refrigerator comprises an evacuated chamber in which is disposed a solid state refrigerant that is connected by a first thermal valve to a first stage such as a cryostat and by a second thermal valve to a heat generating load that is to be cooled. The refrigerant consists of a polarizable electrocaloric material, the entropy of which can be substantially reduced by changing an electric field set up therein by a pair of electrodes disposed on opposite sides thereof. The refrigerant and the load are cooled by cycling the refrigerator through a given sequence of steps including opening and closing the thermal valves and changing the value of the applied electric field.

3,638,441
DEVICE FOR PRODUCING COLD AT LOW TEMPERATURES
Johan Adriaan Rietdijk, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 3, 1970, Ser. No. 16,150
Claims priority, application Netherlands, Mar. 6, 1969, 69/03436
Int. Cl. F25b 9/00
U.S. Cl. 62—6 9 Claims



A cold gas refrigerator operable with an expansion device where a fluid medium is further expanded and cooled, and a compressor to raise the pressure of said further expanded medium, the compressor formed of a compression chamber within the axially movable displacer of the refrigerator and a piston fixed to the refrigerator housing and extending into the chamber.

3,638,442
CRYOGENIC LIQUID LEVEL CONTROL
Albert V. Hedstrom, Pinole, Calif., assignor to Almac Cryogenics, Inc., Oakland, Calif.
Filed Aug. 1, 1968, Ser. No. 749,363
Int. Cl. F17c 7/00
U.S. Cl. 62—49 7 Claims



A pneumatically operated automatic control for the liquid level of cryogenic liquids in which a start valve controls the

starting of cryogenic liquid delivery which continues until the level of the cryogenic liquid reaches a temperature-sensitive sensor. A delivery valve for the cryogenic liquid is held open by a body of entrapped gas under pressure which is first pressurized by the start valve. A metering valve may be employed to release the entrapped gas at a predetermined rate to limit the duration of each filling cycle regardless of the height of liquid level reaches after operation of the start valve. A second temperature-responsive means may be employed for operating the start valve to provide automatic incremental control of liquid level between minimum and maximum levels, and the delivery valve may be employed for controlling the main line valve where evaporative cooling in the main line valve has a tendency to condense pressurized gas at the control port of the line valve.

3,638,443

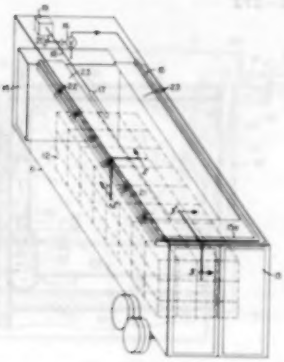
SPRAY REFRIGERATION SYSTEM FOR FREEZE-SENSITIVE PRODUCT

David Paul Maurer, Williamsville, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Original application Nov. 25, 1968, Ser. No. 778,424, now Patent No. 3,525,235. Divided and this application Jan. 22, 1969, Ser. No. 871,187

Int. Cl. F25d *3/10*

U.S. Cl. 62—52 5 Claims



A system for spray refrigeration of freeze-sensitive product to avoid freeze damage and provide more uniform refrigeration, in which a heat-conductive metal extended surface member joins the thermally insulated vaporizer and overhead spray conduits, and spaced nozzles preferably communicate with the spray conduit upper portion to insure only gas-phase refrigerant discharge when liquid flow is terminated.

3,638,444

HOT GAS REFRIGERATION DEFROST STRUCTURE AND METHOD

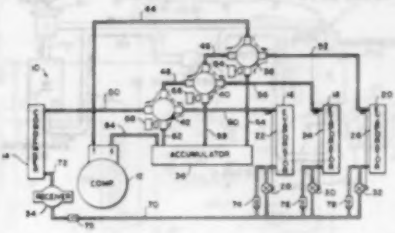
Herbert S. Lindahl, Danville, Ill., assignor to Gulf & Western Metals Forming Company, Detroit, Mich.

Filed Feb. 12, 1970, Ser. No. 10,933

Int. Cl. F25b *41/00*

U.S. Cl. 62—81 20 Claims

A hot gas refrigeration defrost system is disclosed including a compressor and condenser in series with a plurality of series expansion means and evaporators connected in parallel, and a plurality of diverting valves connected between the evaporators and compressor input in parallel and connected in series between the compressor output and condenser. The diverting valves are operable to change the flow of the hot gas from the compressor to one of the evaporators to defrost the one evaporator and are simultaneously operable to isolate the condenser from the compressor output. A check valve is provided in the high side of the refrigeration system between the condenser and evaporators and a check valve is provided around each of the expansion means whereby hot compressor gas passed through an evaporator to defrost the evaporator is bypassed around the associated expansion



means, is prevented from returning to the condenser and is passed through the expansion means associated with the remaining evaporators and back to the compressor. An accumulator is provided between the evaporators and compressor to prevent slugs of liquid refrigerant returning to the compressor at the end of the defrost cycle when the cooling cycle is resumed.

3,638,445

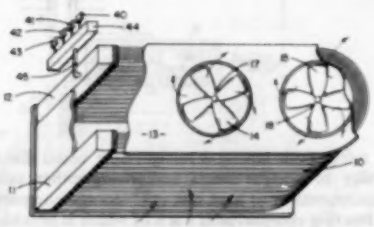
AIR-COOLED CONDENSER APPARATUS

William J. Lavigne, Jr., and Gordon L. Mount, both of Syracuse, N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 19, 1970, Ser. No. 81,973

Int. Cl. F25b *39/04*

U.S. Cl. 62—184 4 Claims



A pair of fans are employed for circulating a flow of cooling air over a condensing coil. The fans are driven by constant speed reversible electric motors. A number of pressure responsive switches are installed in the coil and are operating successively upon rise and fall of pressure in the coil. The switches actuate motor control relays for selectively operating the motors in forward and reverse direction to vary the volume of airflow over the condensing coil according to the pressure therein.

3,638,446

LOW AMBIENT CONTROL OF SUBCOOLING CONTROL VALVE

Robert T. Palmer, 15 Pleasant St., Sharon, Mass.

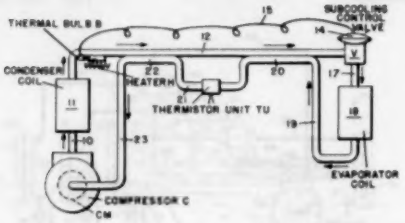
Filed June 27, 1969, Ser. No. 837,172

Int. Cl. F25b *41/04*

U.S. Cl. 62—202 18 Claims

A refrigeration system has a condenser coil cooled by outdoor air, and has a subcooling control valve with its thermal

bulb in heat exchange contact with the liquid line from the condenser coil. The bulb is normally heated by an electric heater, and the valve is adjusted to provide a desired amount of subcooling of the liquid when the heat applied to the bulb



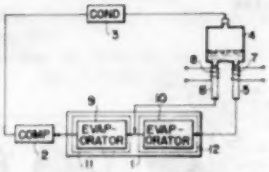
by the electric heater is maximum. At low outdoor temperatures when the condenser pressure decreases so that a conventional subcooling control valve would not open sufficiently, the electric heat is automatically reduced so that the valve opens wider.

3,638,447

REFRIGERATOR WITH CAPILLARY CONTROL MEANS

Yoritsune Abe, Tochigi-ken, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 19, 1969, Ser. No. 851,215
Claims priority, application Japan, Sept. 27, 1968, 43/69455
Int. Cl. F25b *41/04*
U.S. Cl. 62—222 **2 Claims**



A refrigerator having a refrigerating vessel divided into a plurality of compartments comprising either cold storage compartments or at least one cold storage compartment and one freezing compartment each of which is provided with an evaporator for the refrigeration thereof. Capillary tubes are provided for supplying the refrigerant to the individual evaporators in the compartments, and heating coils are wound around portions of the capillary tubes. An electric current is caused to flow through the heating coils in order to provide individual control of the supply of the quantity of refrigerant.

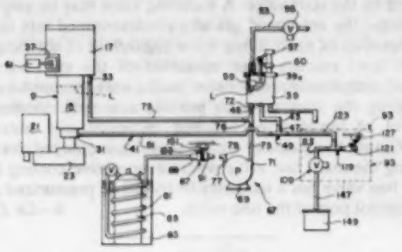
3,638,448

CLEANING SYSTEM FOR THE ICE MAKER OF A VENDOR

Doyle Raymer, High Ridge, Mo., assignor to UMC Industries, Inc., St. Louis, Mo.

Filed May 6, 1970, Ser. No. 35,078
Int. Cl. F25c *1/14*
U.S. Cl. 62—233 **19 Claims**

A cleaning system for the ice maker and appurtenant water lines of a postmix cold drink vendor in which provision is made for connecting the outlet of the water pump of the vendor to the ice maker for circulating water through the ice maker, and having a drain valve for draining the ice maker. A programmer controls the operation of the pump and drain valve for operation through a cleaning cycle involving circulation of water with a cleaning agent therein through the ice maker followed by draining of the ice maker and rinsing with clear water.

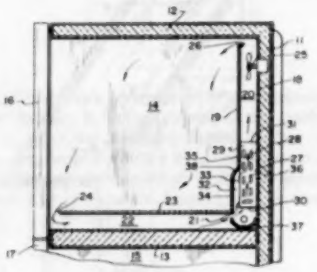


3,638,449

REFRIGERATION APPARATUS

Harley Lichtenberger, Evansville, Ind., assignor to Whirlpool Corporation

Filed Apr. 15, 1970, Ser. No. 28,877
Int. Cl. F25d *21/00*
U.S. Cl. 62—272 **6 Claims**



A refrigeration apparatus for chilling a storage chamber comprising air moving means for moving air through an air permeable refrigerant evaporator for chilling air flowing into the chamber and a duct air bypass exteriorly of the evaporator for flowing air around the evaporator in the region of the air entrance thereto and then back into the evaporator prior to the exit thereof in order to provide continuous flow and chilling of air through the exit portion of the evaporator in spite of frost accumulation on the evaporator. A method of chilling air in a storage space comprising directing the air from the space through a subfreezing chilling means having an entrance and an exit and bypassing the air around this entrance and back into the chilling means upon accumulation of frost at the entrance with the result that the chilling of the air is continued during the accumulation of the frost and prior to its eventual removal.

3,638,450

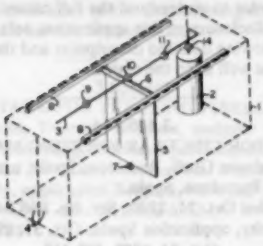
FLEXIBLE PARTITION FOR REFRIGERATED STORAGE CHAMBER

Henry J. Falk, Grand Island, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

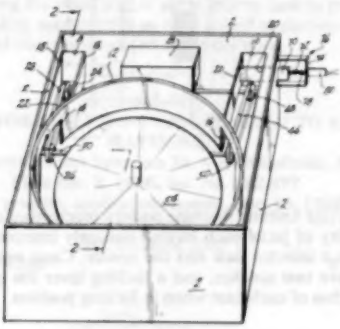
Filed Mar. 23, 1970, Ser. No. 21,633
Int. Cl. F25d *23/08*
U.S. Cl. 62—329 **8 Claims**

A flexible convection partition for dividing a refrigerated storage chamber into multiple nongastight compartments,

which partition is substantially vertically retractable and is storable near the ceiling of said refrigerated chamber.



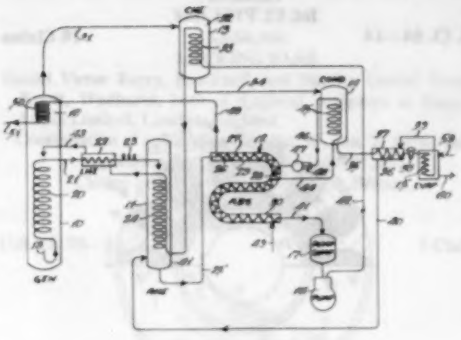
3,638,451
APPARATUS FOR STORING HOLLOW ICE BODIES
William L. Brandt, Lebanon, Mo., assignor to Olin Corporation
Filed July 6, 1970, Ser. No. 52,643
Int. Cl. F25c *5/18*; **B65** *1/06*
U.S. Cl. 62—344 **7 Claims**



Storage of frangible, hollow bodies of ice which are used as targets for shooters is accomplished by feeding the bodies so as to tumble them or change their relative attitudes with respect to each other thus preventing the stored bodies from adhering to each other. A conical supporting plate or floor is mounted in a chamber and constantly rotates therein. An annular side plate is mounted in the chamber, the side plate being spaced apart a predetermined distance from the side edge of the supporting plate, and the side plate is preferably immobilized in the chamber. Bodies are fed onto the supporting plate where they migrate toward its edge due to its conical shape. The combination of the moving supporting plate and immobile sideplate acting upon the bodies causes them to move through the chamber and to tumble as they move.

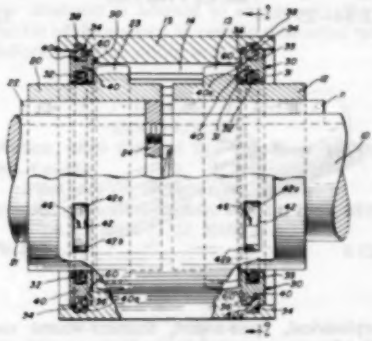
3,638,452
SERIES WATER-COOLING CIRCUIT FOR GAS HEAT PUMP
Roy W. Kruggel, St. Joseph, Mich., assignor to Whirlpool Corporation
Filed Oct. 20, 1969, Ser. No. 867,748
Int. Cl. F25b *15/04*
U.S. Cl. 62—485 **5 Claims**

A heat pump for an absorption refrigeration system which efficiently extracts heat from the system with coolant liquid flowing in series in heat exchange relation, first with the coolest portion of an absorber, then with the condenser, and



then with the hottest portion of the absorber. In the preferred structure, the coolant is then directed through a reflux condenser in the gaseous refrigerant section of the generator.

3,638,453
RETAINER SEAL FOR GEAR-TYPE FLEXIBLE COUPLINGS
John B. Ehret, 20860 Greenwood Drive, Olympia Fields, Ill.
Filed Sept. 28, 1970, Ser. No. 76,005
Int. Cl. F16d *3/18*
U.S. Cl. 64—9 R **19 Claims**

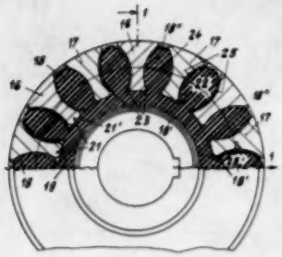


A retainer for securing gear-type coupling sleeves and hubs together against endwise separation. A tapered key of flexible material such as nylon, polyurethane or other plastic which has physical characteristics that permit the key to be pushed endwise, with its smallest end first, through an exterior opening in the coupling sleeve into a complementarily tapered keyway groove between the coupling parts, and to be pulled out of the groove when desired. The key fills the groove, has ends mated, and acts as a key and a seal against loss of lubricant from within the coupling parts.

3,638,454
FLEXIBLE COUPLING

Louis Paul Croset, Fixby, England, assignor to Forjors A.G., Zug, Switzerland

Filed Dec. 12, 1969, Ser. No. 884,540
Claims priority, application Switzerland, Dec. 12, 1968, 18548/68
Int. Cl. F16d 3/64
U.S. Cl. 64—14 10 Claims

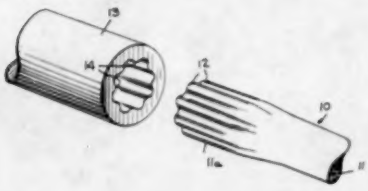


A flexible coupling comprises two concentric (coaxial) flanged members with alternate blades which define circumferentially spaced apertures in which are fitted the radial arms of an elastic load transmission member. The load transmission member has a central annular or ring portion to which the radial arms are secured and at the junction of the arms with the central ring, there are axial recesses to maintain contact between the annular ring and the confronting circular inner blade surfaces when the radial arms are deformed during torque transmittance.

3,638,455
FILAMENT-WOUND RESIN TORSION TUBES WITH MOLDED END SPLINES

Edgar Francois, Wayne, N.J., assignor to Uniroyal, Inc., New York, N.Y.

Filed July 8, 1970, Ser. No. 53,071
Int. Cl. F16d 3/06
U.S. Cl. 64—23 23 Claims



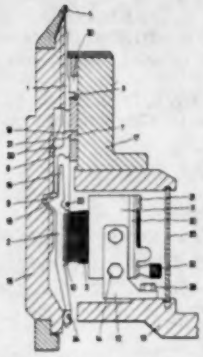
A cylindrical, open-ended, filament-wound resin tube capable of use as a torsion bar or spring, a drive shaft, etc., and having in at least one end region thereof a set of integral molded splines designed to provide for a positive connection of the tube to a cooperatively splined adjunct of the structural members to be interconnected, is disclosed. The splines, which are formed without machining by applying radially directed pressure to the respective end region of the tube, before the final curing thereof, to shape the same against an appropriately contoured mold, are contoured in width along at least a part of their length in the direction away from the proximate open tube end, to provide for a gradual stress transfer to the splines over the entire effective lengths thereof. Added support for the splines may be provided by means of a backup sleeve of metal or filament-wound resin secured to the back surface of the splined end region of the tube.

The foregoing abstract is not to be taken either as a complete exposition or as a limitation of the present invention, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be had to the following detailed description and the accompanying drawings as well as to the claims.

3,638,456
DEVICE FOR CIRCULAR KNITTING MACHINES

Jose Maria Dalmau Guell, Badalona, Spain, assignor to Jumberca, S.A., Barcelona, Spain

Filed Oct. 21, 1969, Ser. No. 868,046
Claims priority, application Spain, Oct. 31, 1968, 359,788; Oct. 24, 1968, 359,468
U.S. Cl. 66—50 R 3 Claims

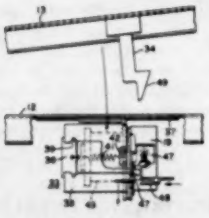


A circular knitting machine pattern mechanism comprising a plurality of jacks each having one only intermediate jack between a selector jack and the needle. Cams operating the jacks have two notches, and a locking lever fits into one of the notches of each cam when in locking position.

3,638,457
ELECTROMECHANICAL INTERLOCK

Edmund H. Filipak, Lexington, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 6, 1968, Ser. No. 735,123
Int. Cl. D06f 37/18, 37/42
U.S. Cl. 68—12 R 4 Claims



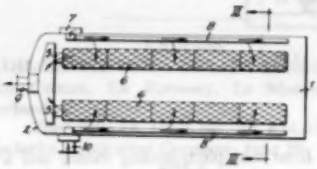
Interlock for the access door of a clothes washing machine which prevents opening of the door during certain portions of the operating cycle, for example, the spin portion thereof. A catch member carried by the door cooperates with a solenoid-actuated latch bar to lock the door during the spin portion of the cycle. The catch also serves to actuate, in the lid-

closed position, a microswitch which enables the washer motor to function. A tab member provided as part of the latch bar prevents inadvertent actuation of the microswitch while the door is open and a cam provided on the catch member enables closure of the door, during normal use even though the latch bar has been actuated.

3,638,458
TANK FOR TREATING FIBERS

Pierre Libbrecht, Tournai, Belgium, assignor to Teinturerie des Francs, Tourcoing, France, a part interest

Filed Nov. 20, 1969, Ser. No. 878,395
Claims priority, application Belgium, Nov. 22, 1968, 724,291
Int. Cl. B05c *8/02*
U.S. Cl. 68—189 **1 Claim**

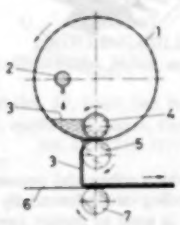


A working tank for treating fibers has distributor means located along the inner wall of said working tank to provide a flow extending substantially at right angles to sleeves consisting of rolled fibers and located inside the tank.

3,638,459
DEVICE FOR APPLYING A LIQUID AGENT TO A FLAT MATERIAL

Peter Zimmer, Untere Sparchen 54, A-6330 Kufstein, Austria

Filed Dec. 8, 1969, Ser. No. 882,877
Claims priority, application Austria, Dec. 10, 1968, A 12026/68
Int. Cl. B05c *5/00*
U.S. Cl. 68—200 **5 Claims**

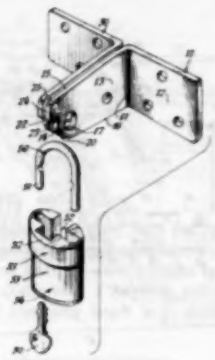


An improved device for applying a liquid agent such as dye in the form of a thin film to and more uniformly across the whole breadth of a flat sheet material, such as textile fabrics, which material is moved relatively past and separated from the applying device. The novel applying device includes a rotary screen cylinder positioned above the sheet material and having an internally disposed pressure or stow squeegee acting on the inner wall thereof in cooperation with an externally disposed doctor or counterpressure squeegee engaging the outer surface thereof and preferably with the squeegees arranged perpendicularly below the axis of the rotary screen. The opposed squeegees may be cylindrical or generally flat or combinations of both and preferably are magnetically attracted to one another through the rotary screen. Another form utilizes a further cylindrical roller disposed parallel to a cylindrical external doctor squeegee and placed below the surface of the sheet material to which the liquid agent is applied. In this latter form, both of said rollers rotatively work together in a common rotative direction, with said doctor squeegee rolling in a counterdirection to a depending flow of the liquid agent issuing from the rotary screen adjacent to the external doctor roller.

3,638,460
LOCKING BARS

Daniel Victor Berry, Bracknell, and Stanley Gerald Thomas Knott, Wadhurst, both of England, assignors to Ingersoll Locks Limited, London, England

Continuation of application Ser. No. 73, Jan. 2, 1970. This application Jan. 5, 1971, Ser. No. 95,257
Claims priority, application Great Britain, Jan. 3, 1969, 521/69
Int. Cl. E05b *67/02, 67/22*
U.S. Cl. 70—52 **7 Claims**

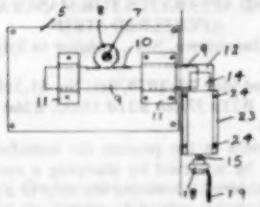


A locking bar adapted to cooperate with a shackle of a padlock, which locking bar comprises a shackle-receiving orifice and an abutment provided on the surface of said bar, the arrangement being such that with the padlock secured to the bar by means of a padlock shackle passing through said orifice, the abutment is adapted to engage with the body and/or shackle of the padlock to restrain substantial rotation of said padlock about the orifice in said bar.

3,638,461
DOOR LOCK

George Watson, 4520 Gothard St., Vancouver 16, British Columbia, Canada

Filed May 11, 1970, Ser. No. 36,006
Claims priority, application Canada, May 14, 1969, 051538
Int. Cl. E05c *15/02;* **E05b** *15/02*
U.S. Cl. 70—92 **4 Claims**



A door lock is provided which is capable of use as a night latch. It includes a pin tumbler cylinder lock so that the key can only be removed when the lock is in a locked position, a

pinion engaging with a rack on a bolt adapted to be retained in a recess in the jamb of the door frame, when the door is closed, by a latching mechanism, lying perpendicular to the bolt. The latching mechanism is provided with a release mechanism whereby the door lock can be easily opened in an emergency by, for example, a child whereby the door can be quickly opened and the child escape through the door opening.

3,638,462

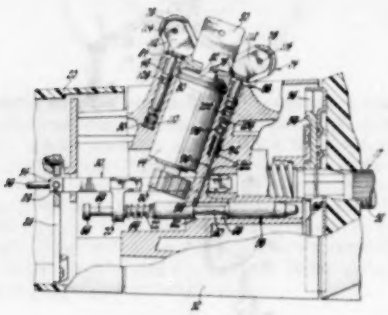
COINCIDENTAL LOCK

Robert L. White, Frankenmuth, and John W. Creed, Jr., Saiginaw, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 18, 1970, Ser. No. 90,622

Int. Cl. B60r *25/02*

U.S. Cl. 70—186 **3 Claims**



A coincidental lock adapted for vehicle steering column applications includes a steering shaft lock bolt movable between locking and unlocking positions, lock means operable by a key to move the lock bolt between its positions, and inhibitor means operable to prevent locking movement of the lock bolt as long as the key is inserted in the lock means, the inhibitor means including an inhibitor pin, a slipring, a key bezel rotatable with the key, cam means on the key bezel engageable on the slipring, and means connecting the slipring and the inhibitor pin. The key, when inserted in the bezel, displaces the cam means to a position depressing the slipring and the latter, when so depressed, functions to yieldingly urge the inhibitor pin to a position preventing locking movement of the lock bolt once the latter achieves the unlocking position.

3,638,463

METHOD AND APPARATUS FOR MANUFACTURING APERTURED STRIP

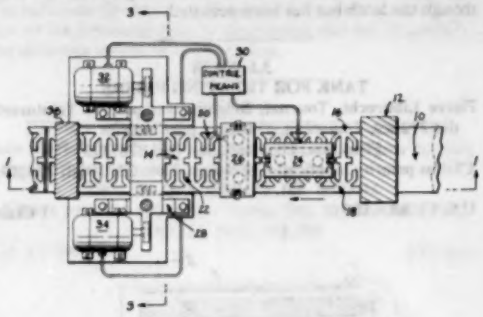
Philip L. Cala, Jamestown, N.Y., assignor to Sylvania Electric Products Inc.

Filed May 28, 1970, Ser. No. 41,318

Int. Cl. B21b *37/00;* **B21d** *38/00;* **B26d** *5/20*

U.S. Cl. 72—12 **7 Claims**

An improvement in the process for manufacturing apertured strip can be achieved by stamping a metal strip at a pitch less than desired, advancing the strip to a pitch-sensing station, wherein the growth of the pitch is measured, indenting the carrier strip a sufficient amount to achieve the desired pitch. A subassembly is useful in the process comprising a stamping means for stamping at less than the ultimate desired pitch, a pitch-sensing means that measures the growth of the pitch spaced apart from said stamping die, an indenting means for indenting the carrier strips a sufficient amount to achieve desired pitch said indenting means being



spaced apart from said pitch-sensing means and a cutting means for cutting said strip into predetermined lengths.

3,638,464

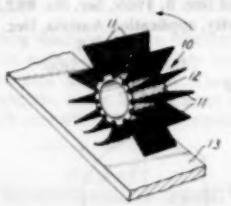
SHOT PEENING

Phillip M. Winter, White Bear Lake, and Gary A. Gardner, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed July 22, 1968, Ser. No. 746,366

Int. Cl. C21d *7/06*

U.S. Cl. 72—53 **8 Claims**



A rotary wheel, in which spheroidal peening particles are affixed to radially extending circumferentially spaced flaps of fibrous sheet material, is used to impart compressive stress to, or aid in shaping, metallic substrates.

3,638,465

METHOD OF FORMING A STRUCTURAL ELEMENT

Robert Paul Lickliter; Earl Abbot, both of Hamburg, and John F. Reeves, Tonawanda, all of N.Y., assignors to Flangeklamp Corporation, Buffalo, N.Y.

Continuation-in-part of application Ser. No. 777,438, Nov. 20, 1968, now Patent No. 3,537,222, which is a continuation-in-part of application Ser. No. 703,955, Feb. 8, 1968, now Patent No. 3,537,217. This application Mar. 10, 1969, Ser. No. 805,542

Int. Cl. B21d *5/08*

U.S. Cl. 72—181 **5 Claims**

A method of forming a structural element comprising feeding a continuous strip of material through a series of forming rolls to progressively bend the elongated strip into a desired transverse configuration. Insulating material is applied to the

material as it is being formed. The continuous strip of material is notched to provide longitudinally spaced transverse

grooves in the strip prior to forming and is severed at the grooves after the strip has been formed into the desired shape.

3,638,466

RECOIL DEVICE FOR A ROTARY FORGING MILL

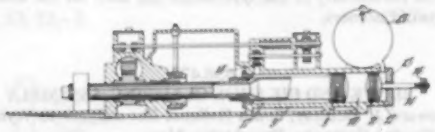
Jean-Paul Calmes, En Pernessy, Le Mont-sur-Lausanne, Switzerland

Filed June 19, 1969, Ser. No. 834,832

Claims priority, application Germany, June 20, 1968, P 17 52 603.3

Int. Cl. B21j *9/12*

U.S. Cl. 72—208 **6 Claims**



Operating a rotary forging mill with a gas recoil device by compressing the recoil gas to a limit pressure and then keeping the recoil gas at approximately the same pressure as the recoil piston continues its rearward travel.

3,638,467

ROLLING MILL

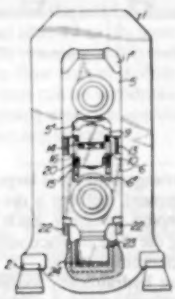
Nobuhiro Fujino, Hitachi-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 29, 1969, Ser. No. 872,066

Claims priority, application Japan, Oct. 30, 1968, 43/78506

Int. Cl. B21b *31/10*

U.S. Cl. 72—237 **9 Claims**



A rolling mill in which a spacer is permanently incorporated in a roll housing to be used for forming a required space between the top and bottom rolls to provide for a roll-changing operation. The spacer is automatically operated incident to the roll-changing operation, to form the space between the top and bottom rolls.

3,638,468

ROLL-CHANGING MEANS FOR FOUR-HIGH ROLLING MILL

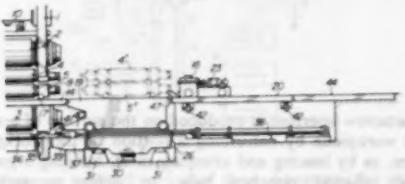
Kakichi Fukui, and Shiro Imai, both of Hitachi-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 30, 1969, Ser. No. 862,331

Claims priority, application Japan, Oct. 2, 1968, 43/71121

Int. Cl. B21b *31/10*

U.S. Cl. 72—238 **17 Claims**



Roll changing means for a four-high rolling mill for automatically and rapidly changing top and bottom working rolls and top and bottom backup rolls without necessitating the use of a crane by combining a working roll changing truck and a backup roll changing truck in a double-sled shifted sidewise manner.

3,638,469

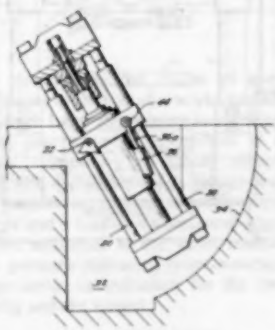
EXTRUSION APPARATUS AND METHOD

Herbert Allen, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Jan. 21, 1970, Ser. No. 4,542

Int. Cl. B21c *23/00*; **A23b** ; **A23l** *3/34*

U.S. Cl. 72—263 **14 Claims**



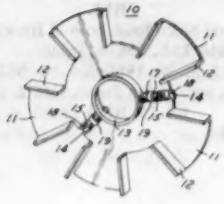
A preform of the material to be extruded is positioned in the die between the platens of a press, when the press is in a vertical position. In this position the sides of the die that require lubrication do not support the preform and the preform can be better aligned with the die. As extrusion begins, the die is rotated to extrude the preform in a horizontal direction where it can be supported conveniently as it leaves the die.

3,638,470

METHOD OF MAKING A FAN

Allen Gilbert Ostrognai, Fort Wayne, Ind., assignor to General Electric Company

Filed June 6, 1969, Ser. No. 831,072
Int. Cl. B21d 43/28; B21c 37/02; B21k 3/04
U.S. Cl. 72—324 3 Claims



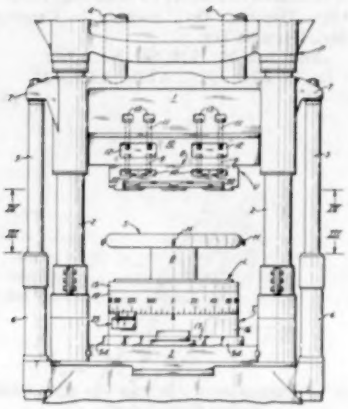
A setscrew aperture is produced on the surface of a sheet metal workpiece by deforming a portion of the workpiece surface, as by lancing and crimping or by bending a pair of spaced, aligned punched tabs, to define a setscrew passageway which may be threaded coincidentally with the deforming step or in a later step.

3,638,471

HEAVY PRESS FORGING APPARATUS AND METHOD

Wayne A. Martin, Wilkins Township, Allegheny, Pa., assignor to United States Steel Corporation

Filed Nov. 28, 1969, Ser. No. 880,628
Int. Cl. B21j 9/02
U.S. Cl. 72—377 21 Claims



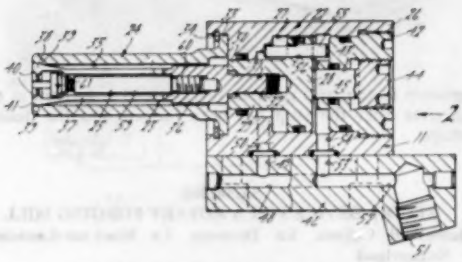
A heavy press forging apparatus and method according to which a contoured lower die in a fixed vertical position is rotated in a horizontal plane relative to a contoured upper die, which is vertically reciprocated to forge a heated blank on the lower die, the contours of the upper and lower dies being formed to the desired shape of opposite sides of a forging. The upper die has a smaller working surface compared to that of the lower die, and the rotating movement of the lower die between vertical forging strokes renders the upper die effective to forge a heated bloom over the entire surface of the lower die.

3,638,472

FASTENER INSTALLATION AND CRIMPING TOOL

John F. Orloff, Mt. Clemens, and William E. Pinkerton, Dearborn Heights, both of Mich., assignors to Huck Manufacturing Company, Detroit, Mich.

Filed Jan. 30, 1970, Ser. No. 7,113
Int. Cl. B21d 9/05; B23p 11/00
U.S. Cl. 72—391 2 Claims



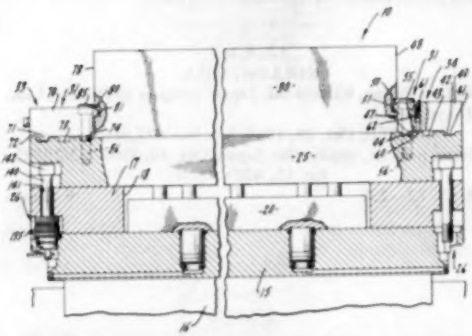
The present invention relates to improvements in crimping tools particularly of the type which are used for the installation of fasteners.

3,638,473

BLOCK AND DIE SHOE CLAMPING ASSEMBLY

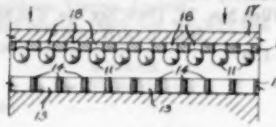
Howard J. McElroy, South Holland, Ill., assignor to Wyman-Gordon Company, Worchester, Mass.

Filed Nov. 19, 1969, Ser. No. 878,160
Int. Cl. B21d 37/14
U.S. Cl. 72—448 9 Claims



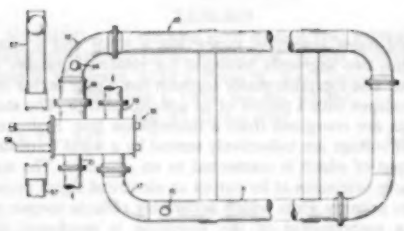
A die-clamping arrangement for a large forging press. The die-clamping arrangement includes a die-clamping assembly and a die shoe clamping assembly, each of which clamps a corresponding die or die shoe in place with great spring force effective through clamping means. To relieve the spring force, the springs are hydraulically loaded and compressed. Threaded adjustment pins or rods can then be turned. In the die-clamping assembly, this backs off the spring support, allowing the spring to expand freely when hydraulic pressure is relieved. In the die shoe clamping assembly, this unkeys the clamping heads.

3,638,474
CONSTRUCTION OF PUNCH DIES
Hedley G. Hannaford, 936 Port Road, Woodville West, South Australia (5011), Australia
Filed Aug. 13, 1969, Ser. No. 849,750
Int. Cl. B21d 37/20
U.S. Cl. 72—476 7 Claims



A punch die for punching depressions in a member for the separation by length of grain or the like, in which the punching face comprises a plurality of balls secured within a substantially common plane and in a fixed spaced relationship by being affixed to a backing plate.

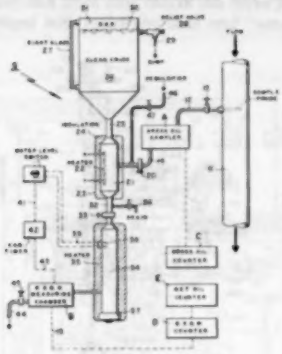
3,638,475
METER-PROVING METHOD AND APPARATUS
Marvin H. Grove, and Lyle R. Van Arsdale, both of Houston, Tex., assignors to M & J Valve Company, Houston, Tex.
Filed Apr. 9, 1970, Ser. No. 26,834
Int. Cl. G01f 25/00
U.S. Cl. 73—3 12 Claims



Meter-proving method and apparatus for calibrating liquid flow metering devices. It employs a metering pipe or loop through which the flow is diverted. A plug or sphere is launched into the inlet end of the pipe and is propelled through the pipe by the liquid flow during a proving run. A special sphere-launching device is provided to launch the sphere into the inlet end of the metering pipe, and also to retain the sphere after it has cleared the pipe, whereby it is ready for the next prover run. This device is constructed to establish seals between the inlet and outlet ends of the proving pipe during and after a run. Its inner shuttle part is movable between sphere retaining and launching positions, and in both positions line flow occurs directly through the device. The inner shuttle part can be withdrawn for replacement of a sphere. Leak detecting means is associated with the seals of the device to detect any leakage.

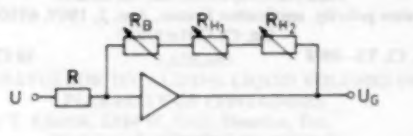
3,638,476
OIL AND SAMPLING SYSTEM
Gerald E. Paterson, 11756 Duart, Houston, Tex., and Daniel D. Compton, 9012 Greiner, Houston, Tex., assignors to Esso Research and Engineering Co.
Filed Dec. 8, 1969, Ser. No. 882,982
Int. Cl. G01n 1/10, 33/26
U.S. Cl. 73—61.1 R 11 Claims

The amount of oil in an oil stream containing water an; other separable contaminants flowing through a pipeline is determined by withdrawing from said pipeline a portion of the oil and separating water and other separable contaminants while registering the total flow of oil, the amount of water and other separable contaminants and the net amount



of oil over a selected period of time. Apparatus for separating water and other separable contaminants from a representative sample of oil and for determining the amount of water and other separable contaminants automatically and registering the several amounts is described.

3,638,477
DEVICE FOR DETERMINING THE CENTER OF GRAVITY AND/OR THE WEIGHT OF AIRPLANES
Hans Brummer, Frankfurt am Main, Germany, assignor to Bevaugc A.G., Zug, Switzerland
Filed Feb. 13, 1969, Ser. No. 798,922
Int. Cl. G01m 1/12; G01g 3/14
U.S. Cl. 73—65 15 Claims

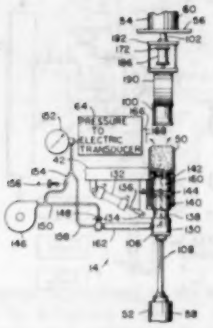


Device for determining the center of gravity and the weight of airplanes with potentiometric pressure indicators by means of which latter the bearing loads being transmitted to the landing gear may be represented as electrical resistance values, comprising an analog computing circuit being charged with a constant input voltage and in the form of a counter coupled operational amplifier equipped with a series resistance and a feedback resistance, wherein the ratio of the feedback resistance to the series resistance is determined by the pressure-indicating potentiometers and whose output voltage serves as indication for the location of the center of gravity and the weight.

3,638,478
STRUCTURE FOR SAND TESTING
Harry W. Dietert, Kerrville, Tex., and Ralph E. Steinmueller, Detroit, Mich., assignors to Harry W. Dietert Co., Detroit, Mich.
Filed Oct. 6, 1969, Ser. No. 864,078
Int. Cl. G01n 5/02, 3/08
U.S. Cl. 73—73 4 Claims

Automatic structure is disclosed for sequentially testing moisture content and compactability, permeability, and

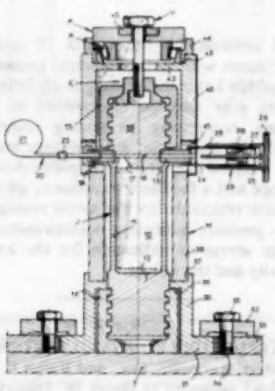
deformation and strength of a sample of foundry sand. The moisture content and compactability and the deformation and strength of the sand may be tested simultaneously. The sample of foundry sand is positioned in a cylinder and compacted by a pair of opposed plungers movable into and out of the cylinder. One of the pistons includes moisture-sensing probes therein. The compacted sand sample is exactly positioned in the cylinder and air is blown therethrough to determine the permeability of the sand after which the specimen is moved out of the cylinder into contact with one of the pistons and the sand specimen is deformed and broken. The compactability, deformation and strength of the sand sample are determined through the use of linear differential transformers registering movement of the pistons with respect to each other.



3,638,479
TESTING DEVICE FOR THREADED ASSEMBLING MEANS OR FASTENERS

Jean Boutet, Chatou, France, assignor to Chrysler France, Paris, France

Filed Mar. 30, 1970, Ser. No. 23,837
Claims priority, application France, Apr. 2, 1969, 6910022
Int. Cl. G01n *3/08*
U.S. Cl. 73—88 F **10 Claims**

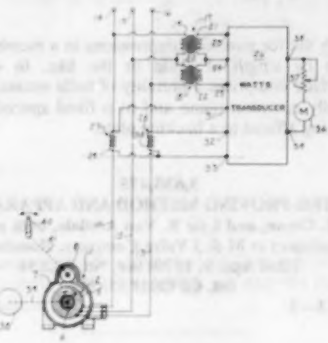


A threaded assembling means to be tested is mounted between a rotatable annular plate and a stationary endpiece respectively carried by one end of a generally tubular fixture and the corresponding end of an extensometer gauge, the opposite ends of which are screwed to a common base member. Said gauge consists of a hollow cylindrical body, the internal space of which is filled with a liquid and communicates with an external capillary tube.

3,638,480
DUAL-STATOR INDUCTION MOTOR TORQUE SENSOR AC DYNAMOMETER

Romeo T. Calud, Beloit, Wis., assignor to Bucyrus-Erie Company, Milwaukee, Wis.

Filed Nov. 21, 1969, Ser. No. 878,860
Int. Cl. G01l *3/00*
U.S. Cl. 73—134 **4 Claims**

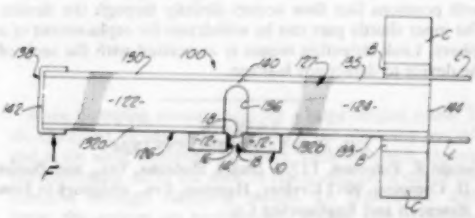


A dual-stator induction motor has a rotor and a stator, which has two segments mounted for relative rotatable adjustment. The rotatable stator segment has a gear sector on it which meshes with a pinion of an actuator motor. The stator segments are energized from a three-phase line. Stator current and voltage are inductively sensed by a watts transducer the output of which is connected to an ammeter. The watts transducer originates at its output an electrical signal proportional to primary watts which accurately reflects torque output. An embodiment of the invention is employed as a dynamometer.

3,638,481
PRESSURE SENSOR

Leslie B. Wilner, Palo Alto, Calif., assignor to Becton Dickinson Electronics Company, Pasadena, Calif.

Filed Mar. 4, 1969, Ser. No. 804,066
Int. Cl. G01l *1/22*; G01b *7/16*
U.S. Cl. 73—141 A **11 Claims**



A pressure sensor is provided with a resilient diaphragm responsive to pressure which produces a corresponding actuating force on a unitary piezoresistive semiconductor element which is prestressed to exhibit a conductance that is a

linear function of the actuating force over an extended range of compression forces so that electrical signals produced by the pressure sensor are a linear function of the applied pressure or force.

3,638,482

METHOD AND APPARATUS FOR INDICATING TRACK CONDITIONS

Egon Schubert, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen, Vienna, Austria

Filed May 8, 1969, Ser. No. 822,966
Claims priority, application Austria, June 25, 1968, A 6104/68
Int. Cl. B61k 9/08
U.S. Cl. 73—146 **8 Claims**

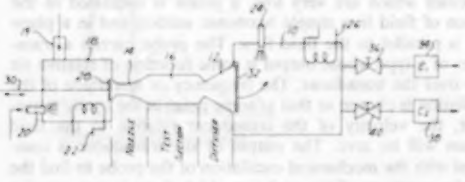
Changes in acceleration caused by local track conditions are directly or indirectly measured as a car moves over a track section. The resultant signals are totalled to produce a signal or parameter characteristic of the track section condition, and this is compared with a comparison signal characteristic of a track condition norm.

3,638,483

METHOD AND MEANS FOR REDUCING POWER REQUIREMENTS OF SUPERSONIC WIND TUNNELS

Ahmad R. Shouman, 1710 S. Pecos St., Las Cruces, N. Mex.

Filed June 1, 1970, Ser. No. 42,264
Int. Cl. G01m 9/00
U.S. Cl. 73—147 **6 Claims**



A system for reducing the power requirements of supersonic wind tunnels of the type having variable geometry diffusers which involves especially a pumping system which is capable of creating the pressure ratio across the tunnel necessary for starting conditions in a blow down configuration at small mass flow rate of air and which at the same time is sufficiently variable or flexible that it is capable of pumping the designed mass flow rate of air through the tunnel at a lower pressure ratio when the tunnel achieves a steady-state condition.

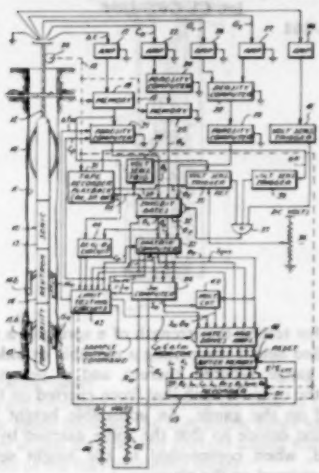
3,638,484

METHODS OF PROCESSING WELL LOGGING DATA

Maurice P. Tixier, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Nov. 5, 1968, Ser. No. 773,592
Int. Cl. E21b 47/08
U.S. Cl. 73—152 **44 Claims**

In accordance with illustrative embodiments of the present invention, techniques for determining certain formation characteristics in shaly sands are disclosed. In one embodiment, porosity data derived from sonic, neutron and formation density logging tools are combined with noninvaded zone resistivity data and various "assumed value" parameters to produce computed indications of shale or clay content, total and effective, nonclay filled porosity, hydrocarbon and water saturation, and formation pressure. In other embodiments, porosity data from only two of the three porosity tools can be combined with resistivity data and "assumed value"



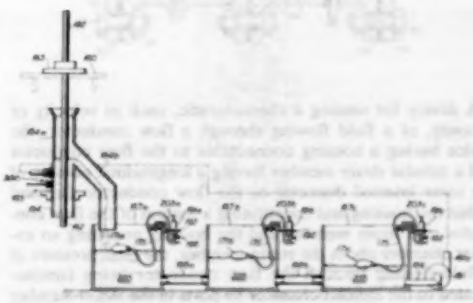
parameters to produce the computed indications. In all embodiments, the computed indications are tested for feasibility, and if not feasible, certain ones of the "assumed value" parameters are adjusted to make the computed indication feasible. Additionally, spontaneous potential, natural gamma ray, and borehole diameter data may be used to inhibit the computations under certain borehole and formation conditions.

3,638,485

APPARATUS FOR TOTALIZING LIQUID VOLUMES IN A PLURALITY OF CONTAINERS

Walter T. Knauth, 1334 W. Grey, Houston, Tex.

Filed June 5, 1969, Ser. No. 830,760
Int. Cl. E21b 47/10
U.S. Cl. 73—155 **23 Claims**



The apparatus provides a turning moment that is proportional to the total volume of liquid in the liquid containers

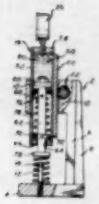
being monitored. This turning moment controls the pressure in a conduit by controlling the rate gas can bleed from the conduit so the pressure in the conduit is proportional to that total volume of the containers.

3,638,486

VALVE SPRING TESTER

James H. Lambert, Dallas, Tex., assignor to Frank L. Kehr, Dallas, Tex.

Filed Apr. 26, 1968, Ser. No. 724,522
Int. Cl. G01l 1/04
U.S. Cl. 73—161 **3 Claims**



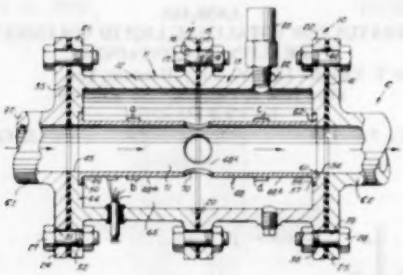
A device for testing the strength of a spring at a predetermined installed height comprising a movable cylinder having a pressure gauge secured thereto and a piston slidably disposed in the cylinder such that force exerted on the piston is registered on the gauge. An adjustable height limiter is secured to the device so that the force exerted by a spring being tested, when compressed to the height set on the limiter, is registered on the gauge.

3,638,487

FLUID CHARACTERISTIC SENSING DEVICE

Seymour H. Raskin, Dallas, Tex., assignor to Sands Measurement Corporation, Dallas, Tex.

Filed Nov. 14, 1969, Ser. No. 876,628
Int. Cl. G01f 1/06
U.S. Cl. 73—194 E **18 Claims**



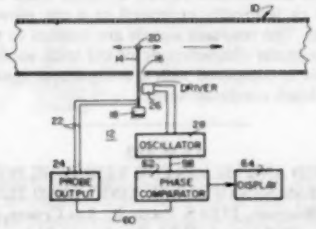
A device for sensing a characteristic, such as velocity or viscosity, of a fluid flowing through a flow conductor, the device having a housing connectable to the flow conductor and a tubular strain member having a longitudinal passage of the same internal diameter as the flow conductor disposed within the housing and constituting a section of the flow conductor, the strain member and the housing providing an annular chamber about the strain member, the fluid pressure of a fluid flowing through the flow conductor being communicated to the annular chamber by ports in the strain member or by a bypass conductor, and a plurality of strain gages spaced longitudinally of and bonded to the strain member and connected in a Wheatstone bridge circuit, the resistances of the strain gages at an upstream portion of the strain member varying as tension forces imposed on the upstream portion of the strain member and the resistances of strain gages at a downstream portion of the strain member varying as the compression forces imposed on the downstream portion by fluid flowing therethrough. The Wheatstone bridge provides an output voltage or signal which varies in accordance with the velocity of flow of the fluid through the strain member if the velocity of flow may vary and thus acts as a flow meter, or which varies in accordance with the viscosity of the fluid flowing through the strain member if the velocity of the fluid is constant and its viscosity may vary. The sensing device may also include means for sensing the temperature of the fluid to provide an output signal to a computer to which the output of the Wheatstone bridge is also transmitted so that the computer may provide an output signal, which is indicative of a certain characteristic of the fluid flowing therethrough, to a controlled device, such as a transducer, electrically operable valve, recorder and the like.

3,638,488

FLUID VELOCITY MEASURING DEVICE AND METHOD

Robert S. Meijer, Chicago, Ill., assignor to Alnor Instrument Company, Div. of Illinois Testing Laboratories, Chicago, Ill.

Filed Aug. 17, 1970, Ser. No. 64,312
Int. Cl. G01f 1/00
U.S. Cl. 73—194 B **8 Claims**



For the measurement of low-fluid velocities, especially velocities which are very low, a probe is oscillated in the stream of fluid in a simple harmonic motion and in a plane that is parallel to the fluid flow. The probe carries a transducer of a type whose output is some function of relative air flow over the transducer. The frequency or amplitude of the oscillation is chosen so that at some point in the cyclic movement, the velocity of the transducer relative to the fluid stream will be zero. The output of the transducer is compared with the mechanical oscillation of the probe to find the angular positions of the probe at which there is zero relative speed and these positions are related to fluid velocity in accordance with the expression

$$V_f = A\omega \cos \theta,$$

where V_f is the velocity of the fluid medium, A is the amplitude of the vibration of the probe, ω is the angular frequency of the vibration and θ is the angular position of the probe when velocity of transducer relative to the fluid medium is zero.

3,638,489

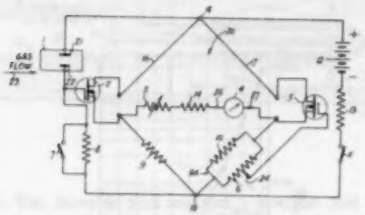
STABLE IONIZATION-TYPE ANEMOMETER HAVING AN OPTIMALLY ADJUSTABLE MEASUREMENT RANGE

Vojtech Buran, Brno; Jaromir Kuba, Troubsko Ubrna; Adolf Uncovsky, and Karel Zouhar, both of Brno, all of Czechoslovakia, assignors to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi, Brno, Czechoslovakia

Filed Oct. 13, 1969, Ser. No. 865,901
Int. Cl. G01f 1/00
U.S. Cl. 73—194 E **4 Claims**

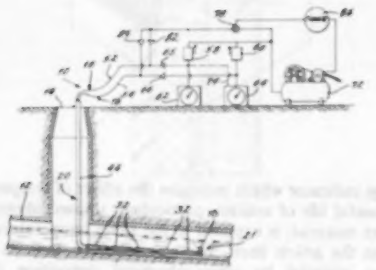
A gas whose velocity is to be measured is passed through an ionization tube, and a first voltage proportional to the

resulting ionization current is applied to one of two measurement arms of a bridge. A second voltage equal in magnitude to the first voltage when the velocity of the gas through the tube is zero is applied to a second arm of the bridge to set a zero reference on an ionization current meter connected between corresponding points on the measuring arms. The



meter is then adjusted for full-scale deflection when the first voltage is reduced to zero to set the upper limit of the measuring range. The ionization current read on the meter during actual gas flow will now be accurately indicative of the flow velocity irrespective of the density and composition of the gas.

3,638,490
FLUID FLOW MEASURING DEVICE
Carl F. Buettner, 9501 Pine Spray Court, Crestwood, Mo.
Filed Jan. 17, 1969, Ser. No. 791,948
Int. Cl. G01f *1/00*
U.S. Cl. 73—212 **21 Claims**



Means for determining the velocity and depth of a flowing body of fluid such as fluid flowing in a water or sewer main, said means including conduit means immersed in the flowing fluid, means forcing gas out through the immersed conduit means into the fluid, and other means responsive to the force or pressure required to force gas into the stream, said last-named means being calibrated to indicate and/or record information from which the depth and/or velocity of the fluid body can be determined.

3,638,491
FUEL-GAUGING DEVICE
Atlee S. Hart, 8776 Woodside Park Drive, Oak Park, Mich.
Filed Dec. 4, 1967, Ser. No. 687,724
Int. Cl. G01f *23/26*
U.S. Cl. 73—304 C **18 Claims**

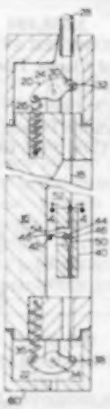
A fuel-gauging device including concentric tubes that are adapted to be mounted within the fuel tank and circuitry positioned within the inner tube and connected to an external gauge. The circuitry includes an oscillator to which direct current is supplied from a source such as the battery of the aircraft through a zener diode. The output of the oscillator is supplied to a capacitance bridge, one leg of which is formed by the concentric tubes. The output of the capacitance bridge is in turn supplied to an amplifier which includes oppositely disposed transistors, namely, a PNP- and NPN-transistor, connected in a manner to compensate for temperature changes in the transistor characteristics. The output of the amplifier is supplied through a voltage divider to the

fuel-indicating meter.

Means are provided for metering the flow of fuel into and out of the space between the concentric tubes to provide for a damping action and thereby prevent undue fluttering or erratic action of the fuel-indicating meter.

For use in fuel tanks provided in the wings of airplanes having a substantial dihedral angle, two fuel-gauging sensors are connected in a bridge circuit to operate a single fuel-indicating meter.

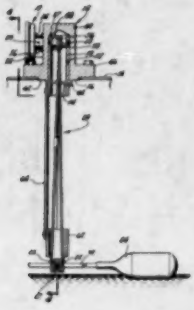
3,638,492
LIQUID LEVEL MEASURING DEVICE
Thomas A. Fling, 524 Post St., San Francisco, Calif., and William F. Fling, 351 South Fuller St., Los Angeles, Calif.
Filed May 7, 1970, Ser. No. 35,333
Int. Cl. G01f *23/06*
U.S. Cl. 73—315 **3 Claims**



A liquid level measuring device is provided with a frame and a float member in near association with a guide. A gripper member is mounted on the float and engages the

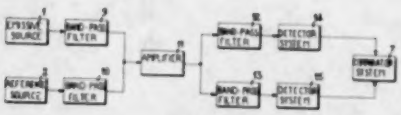
guide. Means connected to the guide selectively disengage the gripper member from the guide.

3,638,493
FLUID LEVEL GAUGE ASSEMBLY
Charles F. Schoepflin, 8321 Crenshaw Blvd., Los Angeles, Calif.
Filed Dec. 28, 1970, Ser. No. 101,450
Int. Cl. G01f 23/12
U.S. Cl. 73—317 3 Claims



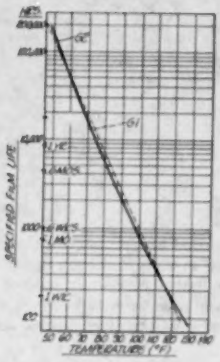
An easy to construct and install gauge assembly for continuously monitoring the level of fluid in a tank in response to movement of a float secured to a lower shaft of the assembly. The assembly comprises a gauge on a support body over a small opening in the top of the tank and responsive to turning of an upper shaft within the support body. Upper and lower brackets connected by a support arm extend from the body within the tank. The upper bracket is releasably secured in a vertical bore in the body adjacent the gauge. The upper and lower brackets include a pair of upper and lower open-ended slots, respectively, for receiving the upper and lower shafts and sprockets for supporting a continuous loop of chain. The pairs of upper and lower slots and hence the upper and lower shafts are angularly displaced at an angle greater than 90° and less than 180° whereby the chain is twisted to remove undesired slack and such that vertically extending portions of the chain are spaced from the support arm from each other.

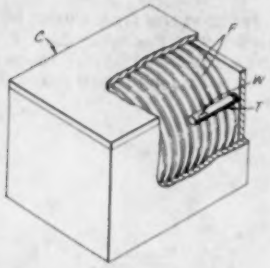
3,638,494
RADIOMETER SYSTEMS
Georges Broussaud, and Claude Tinet, both of Paris, France, assignors to Thomson-CSF
Filed June 3, 1969, Ser. No. 829,995
Claims priority, application France, June 20, 1968, 155733
Int. Cl. G01j 5/00; G01r 23/00
U.S. Cl. 73—355 R 5 Claims



A radiometer system comprising two filters, for respectively selecting two adjacent spectrum portions of the signals respectively radiated by the source whose temperature is to be measured and by a reference source, and two other filters for separating said spectrum portions after amplification in a single amplifier. The corresponding energy fractions are then detected and applied to a differential comparator.

3,638,495
METHOD FOR DETECTING AGING OF ARTICLES
Donald R. Sessler, Temple City, Calif., assignor to Dynametric, Inc., Pasadena, Calif.
Filed Aug. 7, 1968, Ser. No. 750,810
Int. Cl. G01k 3/04, 7/24
U.S. Cl. 73—362 AR 2 Claims



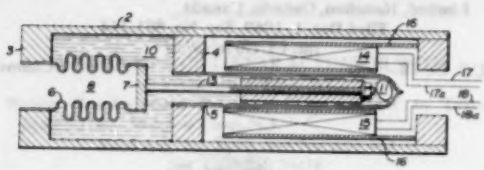


An age indicator which indicates the effect of temperature on the useful life of articles, particularly unused photosensitive sheet material, is exposed to the same temperature conditions as the article itself. The age indicator deposits metal or other material by electrochemical deposition in accordance with Faraday's law. The rate of deposition is made proportional to the known aging rate of the article at various temperatures, so that a correct indication of aging can be obtained even though the article is exposed to unknown, widely variable, temperature conditions. The age indicator is conveniently placed in close proximity to the article, such as inside a container with the article, thereby being exposed to the same unknown, widely variable, temperature conditions as the article itself. Such temperatures occur, for example, in the transportation or storage of articles through or in zones of extremely high temperatures. During the period of exposure, the age indicator will provide an indication of the remaining or consumed useful life of the article.

3,638,496
PRESSURE TRANSDUCER
Earle C. King, Evans City, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.
Filed June 15, 1970, Ser. No. 45,995
Int. Cl. G01l 9/10
U.S. Cl. 73—398 R 3 Claims

A pressure transducer has a chamber partitioned into two compartments by a movable wall; one compartment is open

to the fluid pressure to be measured; the other compartment is closed and filled with a liquid and a predetermined amount of gas. The movable wall assumes a position that equalizes the pressure in the two compartments and electrical means indicate the position of the movable wall.



3,638,497

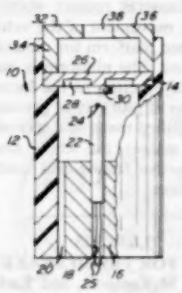
PRESSURE AND FORCE TRANSDUCER MEANS

Amotz Frenkel, Lansdale, Pa., assignor to Transducer Systems, Inc., Willow Grove, Pa.

Filed July 16, 1969, Ser. No. 842,100

Int. Cl. G01l 9/10

U.S. Cl. 73—398 R **11 Claims**



A transducer means including a tubular housing having a resilient diaphragm mounted therein and extending thereacross adjacent one end of the housing. A mounting block is secure in the other end of the housing. A proximity transducer is mounted on the mounting block and extends into the housing. The proximity transducer has a core which projects from the end of the proximity transducer which is adjacent the diaphragm. A deflection core of metal is secured to the surface of the diaphragm which faces the core of the proximity transducer. A closure member is secured in the one end of the housing and includes means for applying to the diaphragm the pressure or force to be measured.

3,638,498

FLUID STREAM SAMPLING APPARATUS

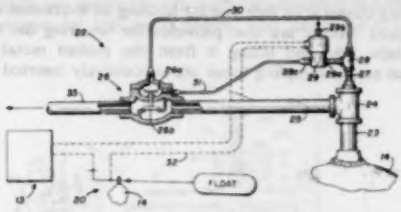
Jimmie J. Nelms, Luling, Tex., assignor to Mobil Oil Corporation

Filed Mar. 11, 1968, Ser. No. 712,015

Int. Cl. G01n 1/10

U.S. Cl. 73—422 TC **5 Claims**

An apparatus for obtaining samples from a fluid stream having a gas-eliminating section, a sampling section, and a control section. A probe is positioned in the main conduit through which the stream flows to continuously divert a portion of the stream into a sample chamber. At desired intervals, the control section actuates valve means to isolate fluid in the sample chamber and to allow gas from the gas eliminator to displace the fluid from the chamber into a sample container.



3,638,499

DEVICE FOR SAMPLING FLUID OF HYDRAULIC CIRCUIT

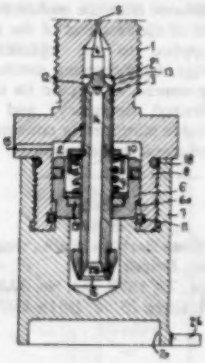
Robert Saint-Andre, 95, av. de Naugeat, 87 Limoges, France

Filed May 13, 1969, Ser. No. 824,172

Claims priority, application France, May 13, 1968, 151567

Int. Cl. G01n 1/10

U.S. Cl. 73—422 R **9 Claims**



A device for taking samples of fluid from a hydraulic circuit while operating under pressure comprises a hollow body having a chamber which is connected into the circuit through a very small opening which is normally closed by a point at the end of a spring-pressed plunger slidable in the chamber and having near its point lateral channels leading into a central longitudinal channel through which the sample is discharged when the plunger is pulled down against its spring so as to open the opening. A controlled-leakage passage prevents accumulation of solid particles and keeps the device clean so that subsequent samplings are not contaminated.

3,638,500

APPARATUS FOR TAKING SAMPLES OF MOLTEN METAL

Mayo R. Wetzel, Salt Lake City, Utah, assignor to Kennecott Copper Corporation, New York, N.Y.

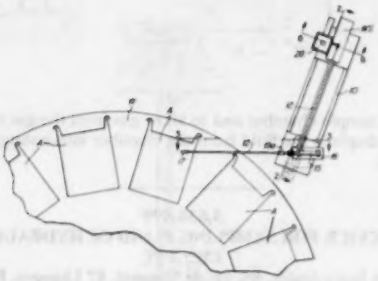
Filed Dec. 15, 1969, Ser. No. 885,247

Int. Cl. G01n 1/14

U.S. Cl. 73—423 **10 Claims**

A sample of molten metal is taken by swinging an elongate arm over the molten metal from a safe distance and by lower-

ing a carried sampling tube into the molten metal to extract a sample. The sample-containing tube is raised and swung to a collecting station, where it is released. The sampling arm is pivotally mounted to swing on a vertical axis and has a receiving clamp at its free end for holding an evacuated sampling tube. Means are also provided for lowering the sampling tube into and lifting it from the molten metal. Individual empty sampling tubes are successively inserted into



the receiving clamp by injecting mechanism located at a work station a safe distance from the molten metal but within the lateral swing path of the free end of the arm. The tubes are individually supplied to the injecting mechanism, preferably from storage, by dispensing mechanism. The apparatus can be programmed to execute its sampling cycles automatically at desired frequency, and is preferably mounted upon a movable platform for convenient placement with respect to molten metal to the sampled.

3,638,501

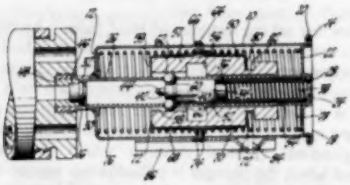
SENSOR

Otakar P. Prachar, Santa Barbara, Calif., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 27, 1970, Ser. No. 32,090

Int. Cl. G01p *15/04;* **H01h** *35/14*

U.S. Cl. 73—492 **6 Claims**



A bidirectional sensor having an operator mounted within a tubular guide and spring biased in one direction. The operator is constrained against movement by the engagement of a plurality of balls with a shoulder thereof. The balls are held against being cammed outwardly through apertures in the guide by an internal annular wall of a seismic mass. Spring seats extending between spaced annular walls of the mass and a common stop on the sensor housing are engageable by opposing threshold springs.

3,638,502

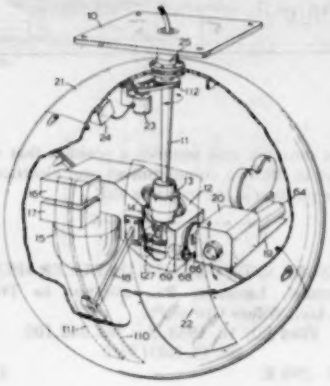
STABILIZED CAMERA MOUNT

John N. Leavitt, West Flamboro, Ontario; Raigo Alas, Hamilton, Ontario, and Edwin C. Dafoe, Dundas, Ontario, all of Canada, assignors to Canadian Westinghouse Company Limited, Hamilton, Ontario, Canada

Filed Dec. 1, 1969, Ser. No. 881,244

Int. Cl. G01c *19/30*

U.S. Cl. 74—5.34 **7 Claims**



Vehicle-mounted cameras require stabilization to compensate for the erratic movement of the vehicle. This invention provides a stabilized platform for mounting on a vehicle and supporting a camera. The platform is made slightly pendulous so that it is self-erecting to the local vertical and is stabilized first by means of plurality of gyroscopes which provide an artificially amplified mass; and secondly by the movement of suitable real masses, the whole assembly being arranged within a protective fairing and controllable from a remote operators position.

3,638,503

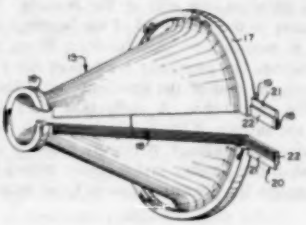
DUST BOOT FOR TREAD BRAKE UNITS

Joseph G. Stipanovic, McKeesport, and Earl E. Allan, Monroeville, both of Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Oct. 3, 1969, Ser. No. 863,550

Int. Cl. F16j *15/50*

U.S. Cl. 74—18 **4 Claims**



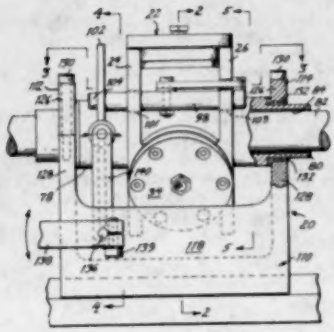
A split- or seam-type cone-shaped replaceable dust boot for surrounding the brake rod of a tread brake assembly wherein the boot is disposed in surrounding relation to the brake rod so as to be readily removable and replaceable without disassembly or removal of the associated brake assembly parts. This seam-type dust boot is installed in surrounding relation to the brake rod while the edges of the split

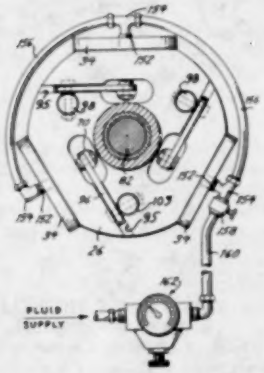
seam are separated, following which these edges are secured together in a sealed relationship by overlapping and interlocking ribs on the mating edges. If desired, a slide-fastener element may be employed to effectuate the interlocking of the ribs on the mating edges.

3,638,504
VARIABLE PITCH LINEAR ACTUATOR WITH VARIABLE THRUST

Wenzel Zaruba, East Paterson, N.J., assignor to Textol Systems Inc., Meadow Lane, N.J.

Filed Aug. 19, 1969, Ser. No. 851,421
Int. Cl. F16h *21/16*
U.S. Cl. 74—25 **10 Claims**





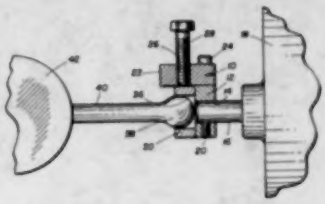
A linear actuator which has a housing with a longitudinally extending cylindrical bore and a plurality of wheels mounted in the housing. A shaft is rotatably and slidably mounted in the bore with the wheels being disposed adjacent the bore and urged against the shaft for controlling the movement of the shaft with respect to the housing. The wheels are urged against the shaft by a pressure controlled diaphragm. Thrust of the linear actuator can therefore be varied from a remote source.

3,638,505
MOTION TRANSFER DEVICE

Stewart W. Wortley, 1814 S. Cheyenne, Tulsa, Okla.

Filed Mar. 11, 1970, Ser. No. 18,453
Int. Cl. F16h *25/08;* **G05g** *1/00*
U.S. Cl. 74—54 **5 Claims**

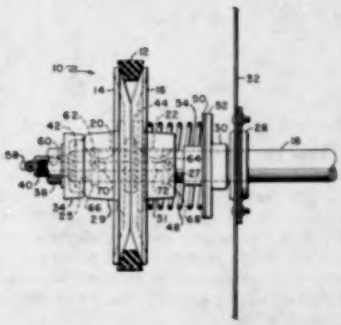
An adjustable motion transfer device for transmitting movement from a drive member to a driven member, and particularly for transferring rotational motion to linear motion. The device is particularly designed for transmitting motion from a power source or motor drive shaft to a pump piston and may be quickly and easily adjusted to provide substantially any desired length of linear movement or reciprocal movement for the pump piston. The device may be connected directly to the drive shaft of the motor and carries an adjustable cam drive member for connection with the pump piston for transmitting the linear motion thereto. The cam drive member may be substantially infinitely adjusted to provide substantially any desired drive or speed ratio between the drive shaft and piston.



3,638,506
VARIABLE PULLEY ASSEMBLY

David L. Wolf, and Robert A. Stelzer, both of Coldwater, Ohio, assignors to Avco Corporation, Coldwater, Ohio

Filed Aug. 3, 1970, Ser. No. 60,521
Int. Cl. F16h *55/52*
U.S. Cl. 74—230.17 **6 Claims**



The disclosure illustrates a variable pulley assembly that may only be adjusted in a nonrotating state. When the pulley assembly is tightened in this state one of the sheaves making up the pulley is displaced away from the other sheave against a spring. The spring returns the displaced sheave to its proper position when the pulley assembly rotates.

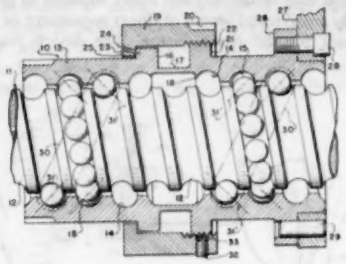
3,638,507
PRELOADED BALL-BEARING SCREW AND NUT MECHANISM

Harry Orner, 2479 Glenn Canyon Road, Altadena, Calif.

Filed Feb. 26, 1970, Ser. No. 14,372
Int. Cl. F16h *1/18, 55/18, 55/02*
U.S. Cl. 74—424.8 **14 Claims**

This invention is a device for adjustably preloading a ball bearing screw and nut mechanism. The nut structure is provided with an intermediate reduced area section including an annular member with a coacting screw mechanism adjustably

actuated to axially stress the reduced area section to change the relative position of the helical groove in the nut structure

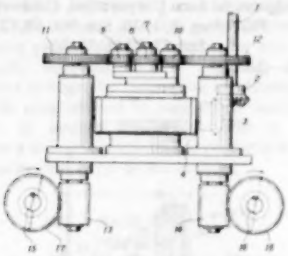


on each side of the intermediate section, relative to the helical groove of the screw, to remove the end play of the nut to the screw.

3,638,508
INTERMITTENT DRIVING DEVICE

Tomoyasu Ikeda, 2600, Imaizumicho, Utsunomiya-shi, Tochigi-ken, Japan

Filed Apr. 24, 1970, Ser. No. 31,648
Int. Cl. F16h *1/16*
U.S. Cl. 74—426 **2 Claims**



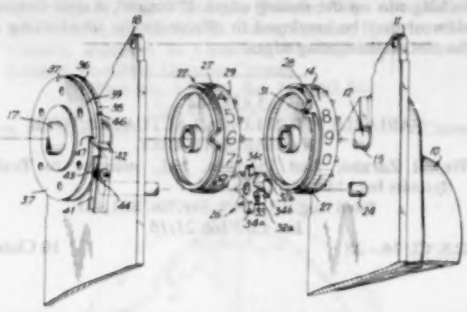
Intermittent driving structure comprising a worm gear, a worm meshed with the worm gear having teeth, each including an arcuate portion which portions are aligned axially of the worm and which together extend the length of the worm engaged with the worm gear and which arcuate portions have no pitch whereby the teeth over this arcuate portion of the worm extend perpendicular to the axis of rotation of the worm so that on each rotation of the worm the worm gear is driven intermittently.

3,638,509
GENEVA DRIVE REPEAT CYCLE TIMER

Charles A. Hunt, 512 Bound Line Road, Wolcott, Conn.; assignor to North American Philips Corp., New York, N.Y.

Filed June 4, 1970, Ser. No. 43,356
Int. Cl. F16h *55/04*; **G01c** *22/00*; **G06c** *7/10*
U.S. Cl. 74—436 **8 Claims**

A timer having means to rotate a shaft on which there is a first geneva wheel that engages the geneva pinion for a limited part of each revolution. The pinion is in mesh with a second wheel and moves that second wheel in short intervals of motion spaced by relatively long intervals of no motion. If the wheels are the same diameter, the second wheel will rotate at the same instantaneous speed as the first wheel during the time the first wheel drives the pinion. The wheel and pinion may be arranged to provide an overall stepdown speed ratio of, for example, 10:1 between the first and second wheels but by arranging the second wheel to move at the same speed as the first wheel and by locating the electrical contact to be actuated by the second wheel, the timing of the actuation of the contact can be controlled much more accurately than by actuating the contact directly from the first

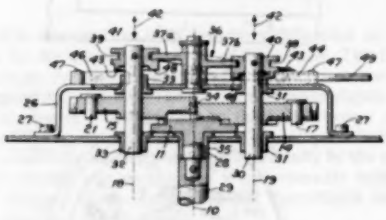


wheel, provided it is acceptable to actuate the contacts during only certain limited intervals of time.

3,638,510
SHIFTING ARRANGEMENT USING A REVERSIBLE GENEVA DRIVE

Karel Jan Staller, Rutherford, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Nov. 26, 1969, Ser. No. 880,256
Int. Cl. F16h *27/06, 3/40*
U.S. Cl. 74—436 **10 Claims**



An arrangement to shift a carriage carrying characters of printers from one position to another by means of a geneva drive. The same drive is used to reverse the shift of the carriage by means of a control camming means such that only one driving pin can engage the geneva gear at a given time.

3,638,511
ASSEMBLY UNIT OF TOOTHED ELEMENTS FOR MOTOR VEHICLES

Peter Kirschner, Wolfsburg, Germany, assignor to Volkswagenwerk AKG, Wolfsburg, Germany

Filed Apr. 23, 1970, Ser. No. 43,298
Claims priority, application Germany, Apr. 25, 1969, P 19 21 099.2
Int. Cl. F16h *55/18*; **F16d** *3/18, 3/54*
U.S. Cl. 74—440 **3 Claims**

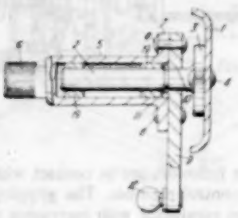
An assembly unit of toothed elements for motor vehicles and particularly for passenger cars having cooperating tooth

elements and a spring to brace the elements counter to the operational direction of rotation.

3,638,512
WINDSCREEN WIPERS

Derek Norman Stevens, and Peter James Underwood, both of Dunstable, England, assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 11, 1970, Ser. No. 71,440
Claims priority, application Great Britain, Sept. 12, 1969, 45,228/69
Int. Cl. B60s *1/34*
U.S. Cl. 74—595 **3 Claims**

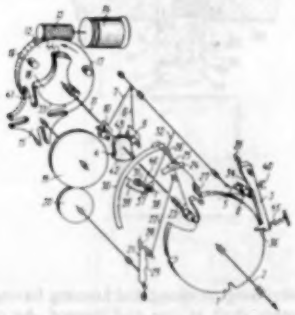


In contrast to the customary windscreen wiper actuator mechanisms in which a rotary spindle, journaled in a fixed housing, carries a crank at one end and has a wiper arm fixed on the other end, the present invention provides an arrangement in which a rotary tubular housing is journaled on a fixed spindle secured to a frame member, the housing being a hollow cylinder closed at one end and serrated at the closed end so as to carry the wiper arm and the open end of the cylinder having a radial flange to which the crank is secured.

3,638,513
INDEXING ATTACHMENTS USED IN MACHINES FOR SHARPENING MULTIPOINT TOOLS

Vladimir Romanovich Poludetkin, ulitsa I Smolenskaya, 8, Korpus 4, kv. 93; Iosif Donatovich Menitsky, ulitsa Pravdy, 49, kv. 60, and Jury Abramovich Kaplan, ulitsa Zhestkova, 21, kv. 4, all of Vitebsk, U.S.S.R.

Filed Sept. 4, 1970, Ser. No. 69,611
Claims priority, application U.S.S.R., Oct. 19, 1969, 1374231
Int. Cl. B23b *29/32*
U.S. Cl. 74—820 **1 Claim**



The invention relates to indexing attachments in multipoint tool-sharpening machines.

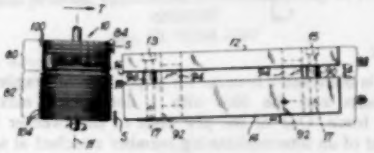
The indexing attachment according to the invention is characterized in that the index plate is turned through the angle of indexing by means of a driving Geneva motion, which is kinematically connected with the index plate through a four-link crank-and-rocker mechanism.

The indexing attachment is intended mainly for use in hob-sharpening machines.

3,638,514
METHOD FOR PRODUCING THREAD ROLL DIES

Mark Richard Carpenter, Oreland, and Albert P. Ludwig, Richboro, both of Pa., assignors to Standard Pressed Steel Co., Jenkintown, Pa.

Filed Sept. 4, 1970, Ser. No. 69,873
Int. Cl. B21k *21/00*
U.S. Cl. 76—101 B **11 Claims**

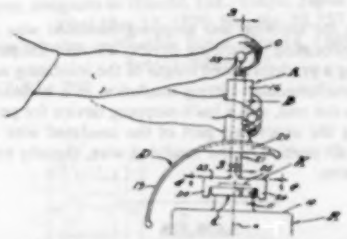


A method for making a thread roll die which is adapted to roll a single continuous pitch thread having two dissimilar thread form sections on a cylindrical bolt blank. A crusher roll having two groups of equally spaced ridges and grooves on its cylindrical surface is pressed against, and rolled over, the top surface of a pair of spaced die blanks. The blanks are positioned at an angle to the path of travel of the roll which is equal to the lead angle of the threads to be rolled and each blank is associated with the only one of the groups of the ridges and grooves on the crusher roll. As the crusher roll is moved over the blanks a complementary pattern of ridges and grooves is formed on each blank by each of the groups. After the rolling operation is completed, the blanks are clamped together along adjacent sides to form a completed unitary thread roll die.

3,638,515
FLUID-DEFLECTING CAP REMOVER

Albert P. Lentz, 9125 Borson St., Downey, and Danny J. Pool, 6512 Rhaeton Ave., Pico Rivera, both of Calif.

Filed Aug. 22, 1969, Ser. No. 852,327
Int. Cl. B67b *7/44*; **B25b** *29/00*
U.S. Cl. 81—3.1 R **4 Claims**



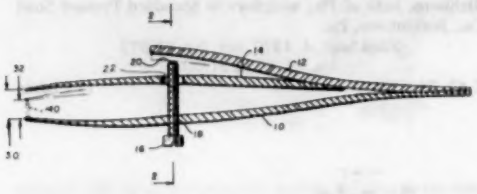
This invention relates to a safety device for the removal of caps from radiators and the like, and provided mechanism for the remote manipulation of a cap for its removal and which incorporates a deflection shield that turns any dangerous flow of fluid in harmless directions, whereby a person can safely open a radiator even when under abnormal pressures that would present dangerous conditions.

3,638,516

TWEEZER WITH ADJUSTABLE PRECISION GRIP

Raymond S. Wondowski, 17 B Hampton Arms, Hightstown, N.J.

Filed Aug. 27, 1970, Ser. No. 67,312
Int. Cl. B25b *9/02*
U.S. Cl. 81—43 **7 Claims**



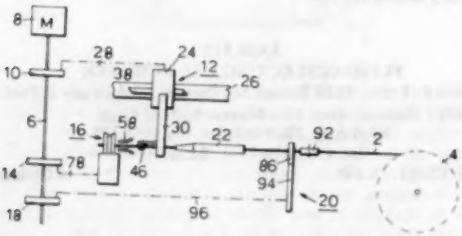
There is disclosed a tweezer for gripping small fragile electronic parts and the like with a determined maximum gripping force. One of the jaw ends of the tweezer is the distal end of an intermediate leg member attached at and by its other end to a shortened leg member of the tweezer. The opposing jaw end is the distal end of the other leg member which also carries a stop screw disposed to engage the shortened leg member to adjustably limit the movement of the outer leg members and the jaw ends toward each other.

3,638,517

APPARATUS FOR SEVERING AND STRIPPING INSULATED WIRE

Joseph Averbuch, 10 Rechov Dizengoff, Tel Aviv, Israel

Filed Apr. 15, 1970, Ser. No. 28,609
Int. Cl. H02g *1/12*
U.S. Cl. 81—9.51 **4 Claims**



Apparatus for severing and stripping insulated wire comprises a reciprocating advancing device, a cutter for periodically severing a predetermined length of the insulating wire, a slitter for simultaneously slitting insulation at a location adjacent to the cut end, and a back-stepping device for periodically moving the unsevered part of the insulated wire while holding the slit portion of the insulated wire, thereby to strip it from the wire.

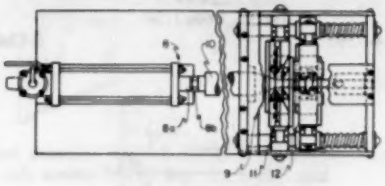
3,638,518

STRIPPING MACHINE FOR ELECTRICAL CONDUCTORS

Gilbert R. Parker, Lorain, Ohio, assignor to Lorain Products Corporation

Filed Aug. 14, 1970, Ser. No. 63,733
Int. Cl. H02g *1/12*
U.S. Cl. 81—9.51 **12 Claims**

A machine for stripping the insulation from the end of an electrical conductor. An insulated conductor is placed between first and second cutter blades each having a size and shape suitable for use with the size of conductor being stripped and between first and second gripping jaws. Cam followers are attached to each cutter blade and each gripping jaw. A control member having a tapered end and a cylindrical body is longitudinally driven against the followers. The cutter blades are arranged to travel inwardly to sever an end section of the insulation when the followers associated therewith are in moving contact with the tapered end of the control member and to trap the severed end section of the insulation when the followers are in contact with the cylindrical body of the control member. The gripping jaws are arranged to grip the conductor with increasing pressure when the followers associated therewith are in moving contact with the tapered end of the control member. As the latter followers travel along the taper, the gripping jaws and the conductor held therebetween move with the control member away from the cutter blades to pull the main body of the conductor away from the trapped end section of insulation.

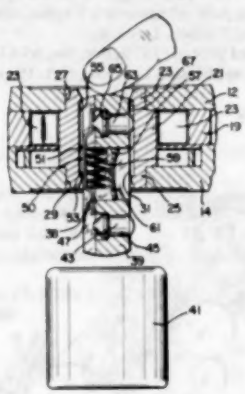


3,638,519

SOCKET RELEASE CONSTRUCTION FOR SOCKET WRENCH

Jerome I. Rebold, Timonium, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.

Filed June 8, 1970, Ser. No. 44,048
Int. Cl. B25b *13/00;* **B25g** *1/00*
U.S. Cl. 81—177 G **14 Claims**



A wrench comprising an elongated housing having a transverse output rotary shaft at one end thereof. An oscillating pneumatic motor is disposed within the housing and is connected by a one-way clutch to the shaft to rotate the latter. A socket shaft extends through the output shaft and is adapted to extend beyond one end or the other of the output shaft and to have a socket mounted thereon. The socket shaft includes novel detent means to retain the socket thereon and to readily release the socket therefrom when desired.

3,638,520
MACHINE TOOL
Jack D. Martin, 5157 Osceola Drive, Dayton, Ohio
Filed Sept. 11, 1969, Ser. No. 857,001
Int. Cl. B23b *21/00*
U.S. Cl. 82—24 **3 Claims**

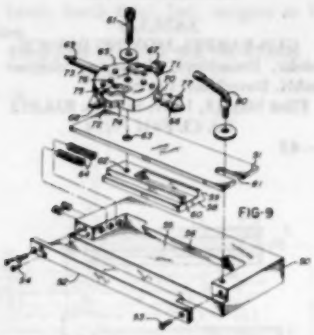
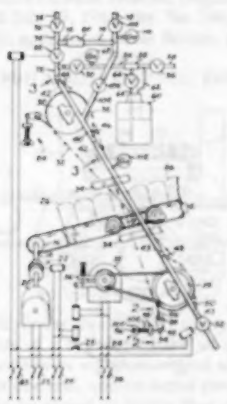


FIG-9

An eccentricity-correcting machine tool comprising a reference surface-following bearing member and a cutter in fixed spacial relationship to said bearing which, in response to the influence of the bearing, will cut in a predetermined pattern in constant relationship to the reference surface regardless of the eccentric or other erratic mounting or movement of the total workpiece of which the reference surface is a part.

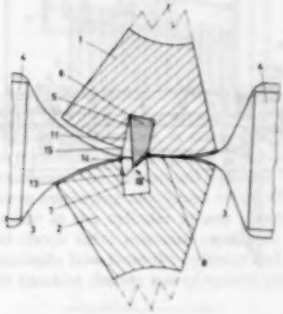
3,638,521
METHOD AND APPARATUS FOR SLICING BREAD AND OTHER BAKERY PRODUCTS
Edward I. Marckx, Portland, and Harvey F. Stines, Gresham, both of Oreg., assignors to Stinemark Corporation, Gresham, Oreg.
Continuation-in-part of application Ser. No. 836,485, June 25, 1969, now abandoned, which is a continuation-in-part of application Ser. No. 681,870, Nov. 9, 1967, now abandoned. This application Nov. 5, 1970, Ser. No. 87,255
Int. Cl. B26d *7/08*
U.S. Cl. 83—22 **8 Claims**



Raisin bread, fruit cake, and other sugary bakery products are sliced by applying a film of moisture continuously to a slicing blade and traversing the products and the blade relative to each other in a cutting path. The moisture film may be applied by subjecting the blade to an aqueous mist or by directing against the blade a spray of steam. In the latter case, a sufficient temperature differential is maintained between the blade and steam to cause the steam to condense on the blade, thereby producing the desired moisture film.

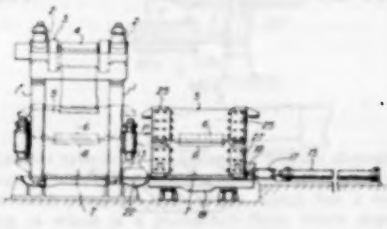
Additionally, a lubricating and cleansing oil film may be applied by subjecting the blade to a mist of an edible oil suspended in a gaseous vehicle therefor.

3,638,522
CUTTING DEVICE WITH ZIGZAG KNIFE
Hans-Ulrich Bolli, Schaffhausen, Switzerland, assignor to Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland
Filed Apr. 30, 1970, Ser. No. 33,229
Claims priority, application Switzerland, May 6, 1969, 6924/69
Int. Cl. B26d *1/40*
U.S. Cl. 83—345 **1 Claim**



A cutting device comprising two oppositely rotating roller sectors of which one has attached thereto an axially extending knife with a zigzag-shaped cutting edge which during the rotation of the roller sectors enters an axially extending groove in the other roller sector so as to cut effectively through one or more layers of foil-shaped material which is clamped between the circumferences of said roller sectors.

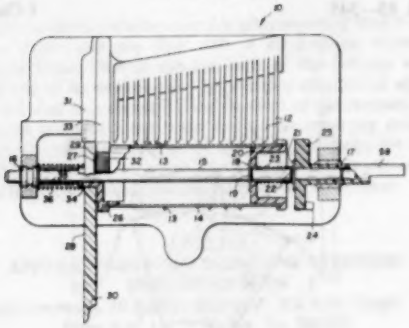
3,638,523
SHEARING MACHINE OF THE INTERCHANGEABLE KNIFE-HOLDER-TYPE
Tetutaro Yasuda, and Tsuneo Nakanishi, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 13, 1970, Ser. No. 36,757
Claims priority, application Japan, May 14, 1969, 44/36561
Int. Cl. B26d *7/26*
U.S. Cl. 83—700 **4 Claims**



A shearing machine of the interchangeable knife-holder-type in which the knife holders are able to be laterally

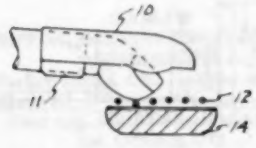
removed together with the movable and stationary knifes supported thereon out of the machine. The movable and stationary knife holders are provided with adjusting wedges respectively so that each wedge disposed in the knife holder may independently adjust the clearance at the knife holder slide guide and the clearance between the movable and stationary knives. Thus is obviated the adjusting operation of the above-described clearances after the knife holders are mounted to the machine.

3,638,524
MULTITUNE MUSIC BOX
Paul A. Martin, East Aurora, N.Y., assignor to The Quaker Oats Company
Filed July 17, 1970, Ser. No. 55,849
Int. Cl. G10f *1/06*
U.S. Cl. 84—95 **31 Claims**



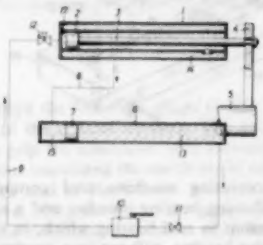
A multitune music box of the drum and comb type has an improved means for axially shifting the drum to play different tunes. The drum is axially movable on a supporting shaft having a stop for limiting the movement of the drum in one axial direction. The shaft is also axially movable, and a cam and follower limits the axial motion of the shaft in the opposite direction. A first spring between the drum and the cam normally urges the drum against the stop, and a second spring urges the drum against the bias of the first spring to press the first spring against the cam and the cam against the follower. Such spring support of the drum prevents any breaking of comb teeth as the drum and its pins are moved axially to shift tunes.

3,638,525
FINGER GLIDE BAR
Edward Sciurba, Lyndhurst, and Sal Chiappone, Bellville, both of N.J., assignors to Ring Products, Newark, N.J.
Filed Sept. 21, 1970, Ser. No. 73,941
Int. Cl. G10b *3/00*
U.S. Cl. 84—319 **4 Claims**



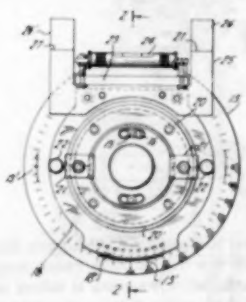
A guitar steel or glide bar for the finger of a guitar player in which the body of the guitar steel or glide bar is long enough on its face to cover the fret board of the guitar and the body is half round in form with a resilient finger fitting ring that may be elastic or a split plastic to permit mounting on the finger but retain a frictional grip, said guitar steel or glide bar formed of a hard material such as metal or plastic to present a frictionless face in contact with the strings of the musical instrument.

3,638,526
GUN BARREL MOVING DEVICE
Hans Klapdohr, Dusseldorf, Germany, assignor to Rheinmetall GmbH, Dusseldorf, Germany
Filed May 15, 1969, Ser. No. 824,852
Int. Cl. F41f *19/14*
U.S. Cl. 89—43 **1 Claim**



A barrel-moving device for guns which comprises a pneumatic counter-recoil cylinder having a hydraulically operated barrel-moving cylinder. A driver connects operatively the counter-recoil cylinder with a gun barrel. The barrel-moving cylinder is in communication with the counter-recoil cylinder hydraulically and pneumatically and a hydraulic connection conduit is disposed between the barrel-moving cylinder and the counter-recoil cylinder. Finally, a manually operated pump is effective selectively in two feeding directions and is disposed in the connection conduit.

3,638,527
INDEXING FIXTURE
Bruno Weissenberg, Valhalla, N.Y., assignor to Wood Industries, Inc., Plainfield, N.J.
Filed Oct. 20, 1969, Ser. No. 867,521
Int. Cl. B23f *23/08*
U.S. Cl. 90—57 **4 Claims**



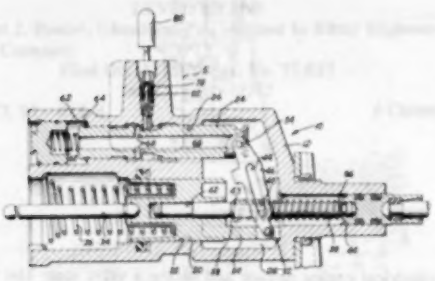
The fixture has a conventional three-clamp scroll chucking device for clamping it at the end of a shaft or a pinion, and a dial attached to this device. A vernier plate with a water level or a similar leveling means is rotatably mounted on the dial

plate for precisely indexing the shaft or pinion to which the device is attached, to any required angular setting for machining operations on the shaft or pinion such as milling, drilling, planing and the like operations.

3,638,528
HYDRAULIC BOOST DEVICE WITH AUXILIARY FLUID SUPPLY

Richard L. Lewis, South Bend, Ind., assignor to The Bendix Corporation

Filed June 17, 1970, Ser. No. 47,066
Int. Cl. F01b *25/00*
U.S. Cl. 91—6 **13 Claims**

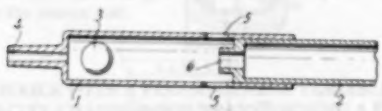


A hydraulic brake booster is disclosed which provides a power assist to the vehicle operator during a brake application. Pressurized hydraulic fluid is supplied to the booster from the vehicle's power steering pump. A charging valve carried in the booster housing permits flow of fluid into an accumulator when the fluid pressure level at the booster inlet exceeds the fluid pressure level in the accumulator. When flow of fluid to the inlet is terminated the charging valve is opened during a brake application to permit flow of fluid from the accumulator to the booster thereby allowing normal operation of the booster for a limited number of brake applications.

3,638,529
APPARATUS FOR GENERATING AN OSCILLATORY MOTION

Donald MacDougal Paterson, London, England, assignor to Paterson Products Limited, London, England

Filed July 23, 1968, Ser. No. 746,891
Claims priority, application Great Britain, July 26, 1967, 34,366/67
Int. Cl. F01l *21/02*; **F15b** *15/22*; **F01l** *15/02*
U.S. Cl. 91—50 **6 Claims**

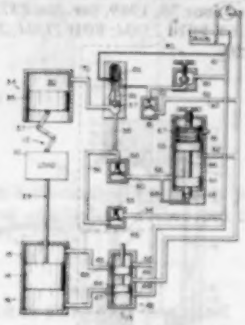


A fluid piston/cylinder mechanism for generating oscillatory motion consists of a cylinder having an inlet port in one end and outlet ports in its walls, uncovered when the piston is remote from that one end, and an outlet port for fluid in the piston, which can be closed to hinder flow of fluid from the cylinder when the piston is adjacent the said one end of the cylinder, but opens when the outlet ports in the walls of the cylinder are uncovered. The closure member for said port may be a freely moveable ball located in the cylinder.

3,638,530
HYDRAULIC COUNTERWEIGHT

John I. Hollister, Tampa, Fla., assignor to Jackson Products Company, Tampa, Fla.

Filed Sept. 4, 1969, Ser. No. 855,263
Int. Cl. F15b *11/08*, *13/042*; **F01b** *1/00*
U.S. Cl. 91—172 **6 Claims**

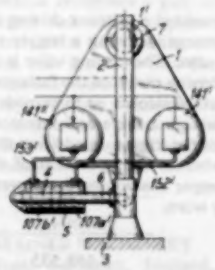


Hydraulic fluid counterbalance system employing a piston and cylinder one of which, being arranged for connection to the load to be counterbalanced, is connected to the pantograph motion translating mechanism of a position controller or transfer machine. The piston and cylinder are part of a hydraulic system employing check and relief valves to insure constant pressure in the cylinder at any piston position. A pilot-operated check valve response rapidly to system pressure loss to preclude flow from the cylinder and continue the counterweight function despite loss of system pressure.

3,638,531
MINING PIT PROP ADJUSTING DEVICE

Hans Rieschel, Miltenberg, and Oskar Jacobi, Blankenstein, both of Germany, assignors to Bergwerksverband GmbH, Essen, Germany

Filed Nov. 26, 1969, Ser. No. 880,062
Claims priority, application Germany, Nov. 26, 1968, P 18 10 869.5
Int. Cl. F15b *11/16*
U.S. Cl. 91—189 **7 Claims**



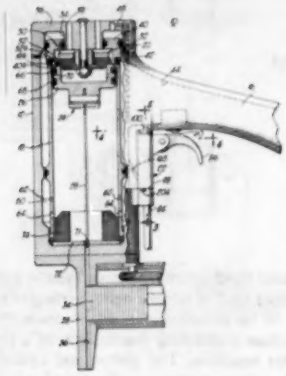
A control system for adjusting the angular disposition of pit props of a traveling mine-roof support system comprising a command pendulum-type switch which has a rockable housing in which is a plumb-bob from which depends a swinging element. When the plumb-bob rocks to a position for measuring the angle of incidence, actuating means is activated for accordingly moving the switch housing and move-

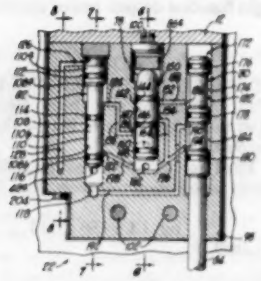
ment of the latter operates to emit signals to switching devices carried by the individual pit props for determining the correct angular disposition thereof in accordance with that of the command switch.

3,638,532
FASTENER DRIVING TOOL

Raymond F. Novak, Schiller Park, Ill., assignor to Fastener Corporation, Franklin Park, Ill.

Filed June 30, 1969, Ser. No. 837,696
Int. Cl. F01b *25/04*; **F01l** *21/04, 25/06*
U.S. Cl. 91—220 **19 Claims**





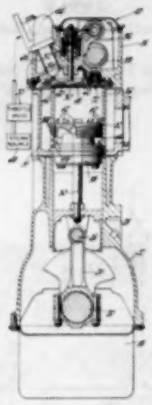
There is provided a fastener driving tool having a control valve arrangement including a trigger valve, a cycling valve and a safety valve. The cycling valve is adapted to repetitively cycle the driving piston of the fastener driving tool through power and return strokes or to provide for single-cycling of the piston through a drive and return stroke in response to the position of the trigger. In addition there is provided an arrangement wherein the operation of the piston is arrested when the bumper cushioning the power stroke of the piston is excessively worn.

3,638,533
CONDENSABLE VAPOR ENGINE CONSTRUCTION

David Carl Sheridan, Utica; Charles A. Amann, Bloomfield Hills, and James M. Ricketts, Oxford, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 29, 1970, Ser. No. 32,980
Int. Cl. F01l *25/06, 15/16*
U.S. Cl. 91—241 **2 Claims**

A condensable vapor engine, such as a steam engine, wherein the piston reciprocates between a top dead center position adjacent the closed end of the cylinder and a bottom dead center position in which vapor outlet ports are uncovered and the vapor escapes. The engine includes a valve located in the cylinder head and in communication with the source of vapor, this valve being disposed in a cavity having a

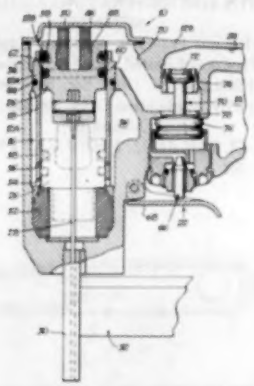


cylindrical caging surface and facing a valve seat. The valve is arranged in spaced relation to the cylindrical surface so as to permit freedom of opening and closing movement and tilt, and the valve and valve seat define cone-to-sphere cooperating surfaces providing full seating engagement despite tilt of the valve body.

3,638,534
FASTENER DRIVING TOOL WITH IMPROVED PNEUMATIC PISTON RETAINING MEANS

Howard B. Ramspeck, Chicago, Ill., assignor to Fastener Corporation, Franklin Park, Ill.

Filed Aug. 18, 1969, Ser. No. 850,809
Int. Cl. F15b *15/22, 15/17, 13/042*
U.S. Cl. 91—399 **20 Claims**



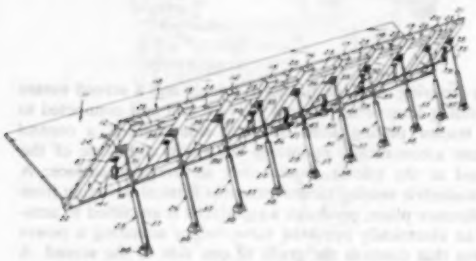
A fastener driving tool includes a cylinder slidably receiving a piston for operating a driver to drive fasteners successively supplied beneath the driver. A main valve selectively supplies compressed air to and exhausts air from above the top of the cylinder to control movement of the piston between normal and displaced positions. The piston is

returned by air supplied from a return air space communicating with the bottom of the cylinder when the top of the cylinder is exhausted. Since this return air leaks to the atmosphere as or after the piston is returned, the uppermost part only of the cylinder is provided with different diameter portions cooperating with two spaced sealing means on the piston which trap or are supplied with compressed air to provide an upwardly directed pneumatic bias for releasably holding the piston in its normal position, this bias being removed as soon as the piston moves downwardly into the uniform diameter portion of the cylinder. The piston biasing air is derived directly from the reservoir air or from a valve carried on the piston.

3,638,535
LEVEL MEANS

Robert J. Ponter, Glenshaw, Pa., assignor to Ritter Engineering Company

Filed Oct. 1, 1970, Ser. No. 77,057
Int. Cl. F15b *11/22*
U.S. Cl. 91—411 R **5 Claims**



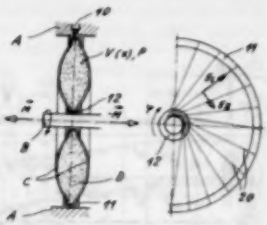
A system for raising and lowering a platen, which is hinged along one edge, by a plurality of rams which have their piston rods pivoted adjacent to the opposite edge of the platen while maintaining the platen in a substantially level condition even if the platen is unequally loaded. The system includes a master ram and a plurality of slave rams. The master ram is operated in response to a command signal which is modulated by an error correcting feedback signal. The feedback signal is generated by an angular position-sensing potentiometer. The slave rams are operated in response to a signal generated in response to transient fluid pressures developed in the master ram so that the slave rams all attain the same pressure as that present in the master ram. A level-comparing device is provided which compares the actual extended level of at least one slave ram on the one hand with the actual extended level of at least one other slave ram on the other hand. A signal is generated in response to any difference in the level of the slave rams and this signal is employed to correct and modulate the signal generated in response to pressure in the master ram.

3,638,536
DEVICE WITH A PRESSURIZABLE VARIABLE CAPACITY CHAMBER FOR TRANSFORMING A FLUID PRESSURE INTO A MOTION

Hans Kleinwachter, 105, Kreuzstrasse, 785 Lorrach, and Jens Geerk, Lorrach, both of Germany, assignors to said Kleinwachter, by said Geerk

Filed July 14, 1970, Ser. No. 54,763
Claims priority, application Germany, July 23, 1969, P 19 37 402.8
Int. Cl. F16j *3/00*
U.S. Cl. 92—92 **8 Claims**

A device for the transformation of a fluid pressure, that is to say of the pressure of a liquid, a vapor, or a gas, into a motion capable of performing mechanical work, which comprises a pressurizable variable capacity chamber. This chamber is wholly or partly formed by a bag-shaped

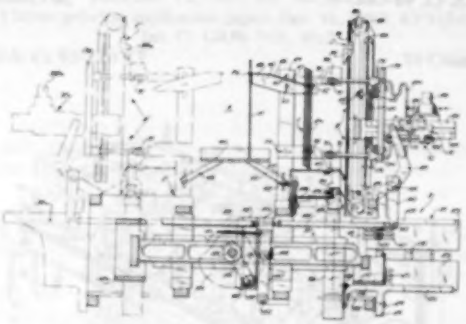


diaphragm which is elastically stretchable in preferably only one direction and attached to at least two rigid relatively movable members.

3,638,537
TRAY FORMING MACHINE

Carl P. Cato, Lynchburg, Va., assignor to Dacam Corporation, Lynchburg, Va.

Filed Apr. 11, 1969, Ser. No. 815,474
Int. Cl. B31b *1/30, 1/46, 17/26*
U.S. Cl. 93—51 R **19 Claims**



A box forming machine comprises a pair of box forming dies and a double-ended ram which engages and inserts a blank into one die, and on its withdrawing movement from that die inserts a blank into the other die. The blank is initially stored in a substantially vertical stack and moved from that stack to a conveyor during which time a part of the blank is folded. The blank is then positively delivered to the die by means also effective to maintain the folded part of the blank in its folded condition.

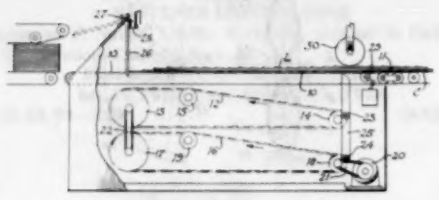
3,638,538
CONTAINER MACHINERY

John Anthony Sullivan, Stockport, England, assignor to Henry Simon Limited, Stockport, England

Filed July 2, 1970, Ser. No. 51,919
Claims priority, application Great Britain, July 24, 1969, 37,202/69
Int. Cl. B65h *33/00*
U.S. Cl. 93—93 DP **15 Claims**

A method of forming a stack of cases from a moving line of cases in shingled configuration comprising the steps of providing means to engage the trailing edge of a case in said

line and progressing said means forwardly at a speed greater than the speed of movement of said line so that successive trailing edges are in turn engaged by said means whereby that



portion of the line forward of said first-mentioned trailing edge is gathered to form a stack of horizontal superimposed cases, and a machine for performing such method.

3,638,539

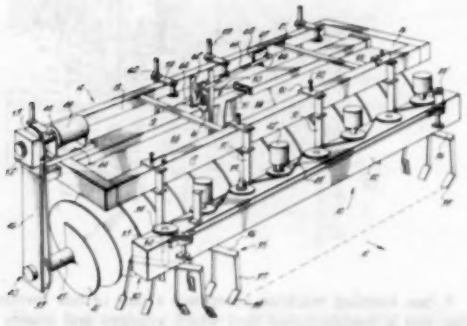
ROAD BASE BUILDING APPARATUS

William Hurst Lewis, Norwalk, Calif., assignor to Gerald L. Revell, Rolling Hills, Calif.

Filed Nov. 13, 1969, Ser. No. 876,342

Int. Cl. E01c *19/12*

U.S. Cl. 94—44 **30 Claims**



A road base building apparatus is described that is adapted to be attached to the support ring of a conventional road grader. The apparatus includes a mounting frame for supporting a plurality of rotating scarifiers, a shoveling assembly and a split moldboard strikeoff with the two portions thereof oscillating in opposite directions. The scarifiers are adapted to loosen and/or mix the rock base material to a uniform consistency. The shoveling assembly functions to laterally distribute the material while the pair of strikeoff portions operate to effect a leveling and smoothing of the material. A V-plow is also adapted to be attached to the conventional road grader forward of the rotating scarifiers for laterally distributing the earth or base material deposited ahead of the apparatus. The various components of the apparatus are driven by hydraulic motors operatively connected to a hydraulic pump which, in turn, is connected to the engine of the road grader through a power takeoff located at the rear of the grader.

3,638,540

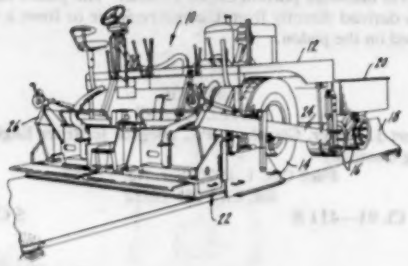
PHOTOCELL GRADE SENSOR AND BUOYANCY SLOPE SENSOR

Loren Williams, Calhoun, Ill., assignor to Blaw-Knox Construction Equipment Company, Inc., Mattoon, Ill.

Filed Dec. 29, 1969, Ser. No. 888,672

Int. Cl. E01c *19/48*

U.S. Cl. 94—46 R **3 Claims**



In a paving machine having a tractor and a screed means extending transversely across the rear end and connected to the tractor pulling arms on each side thereof, a control system automatically maintains the grade and slope of the screed as the tractor moves over an irregular surface. A photoelectric sensing means measures vertical deviation from a reference plane, produces a signal that is amplified to actuate an electrically operated valve means actuating a power means that controls the grade of one side of the screed. A second photoelectric sensing means measures the vertical movement of the opposite side relative to the first side, and produces a signal that is amplified to control a second electrically operated valve means that controls a second power means and said opposite side of the screed, thereby maintaining the screed at a constant slope.

3,638,541

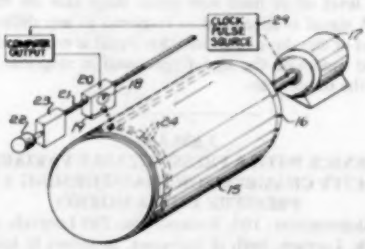
METHOD FOR RECORDING JUSTIFIED LINES OF TYPOGRAPHIC CHARACTERS

Dong W. Lew, Briarcliff Manor, N.Y., and Ralph A. Proud, Jr., Sommerset, N.J., assignors to Harris-Intertype Corporation, Cleveland, Ohio, by said Proud

Filed Nov. 20, 1968, Ser. No. 784,987

Int. Cl. B41b *19/08*

U.S. Cl. 95—4.5 **2 Claims**



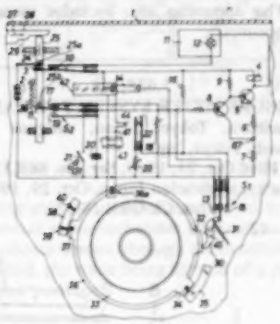
In the present method a digital computer receives a "raw" test input, which it justifies line by line, and stores in its memory the coded identity and location of each typographic character in the justified text. Also stored in the computer memory are the character-generating data for every typographic character which may appear in the text. The com-

puter is programmed to scan its memory electronically in accordance with the scanning operation of a photographic recorder to provide binary output signals to the recorder which cause the latter to record narrow segments of the typographic characters at the proper locations on the record page.

3,638,542
PHOTOGRAPHIC CAMERA WITH AUTOMATIC EXPOSURE CONTROL

Karl Wagner, Ottobrunn, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 26, 1970, Ser. No. 22,773
Claims priority, application Germany, Mar. 28, 1969, P 19 15 871.5
Int. Cl. G03b *7/08*
U.S. Cl. 95—10 CT **15 Claims**



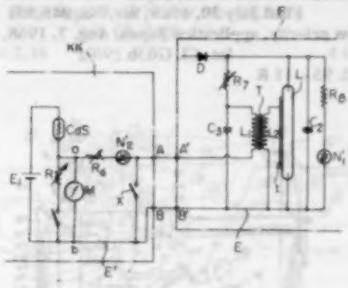
An exposure control for photographic cameras wherein a ring-shaped setting member can influence the exposure of a photosensitive resistor to scene light as a function of film speed and is also designed to connect in the exposure control circuit a resistor which is variable as a function of the film speed. The influencing of the exposure of photosensitive receiver to scene light accounts for the film speed during exposures in daylight and the variable resistor influences the exposure time when an exposure is made with artificial illumination of the subject or scene.

3,638,543
AUTOMATIC EXPOSURE SYSTEM FOR PHOTOGRAPHIC CAMERA

Isao Kondo, Tokyo, Japan, assignor to Olympus Optical Co. Ltd., Tokyo, Japan

Filed July 17, 1970, Ser. No. 55,839
Claims priority, application Japan, Aug. 25, 1969, 44/67068; 44/67069; Oct. 27, 1969, 44/86183; Oct. 28, 1969, 44/102847; Oct. 3, 1969, 44/87785; Nov. 6, 1969, 44/89580; Nov. 20, 1969, 44/93434
Int. Cl. G03b *9/70*
U.S. Cl. 95—10 CE **11 Claims**

An automatic exposure system for use with a camera of the type which includes a light-sensing device and a diaphragm-adjusting mechanism actuated thereby. The exposure system includes a first variable resistor serially connected to the diaphragm-adjusting mechanism but mechanically altered as the focus of the camera is altered. The flash unit with which the camera operates includes a second variable resistor which is adjusted according to the guide number of the flash unit. When the flash unit is coupled to the camera, the first and second variable resistors are placed in series, via the same leads that connect to the synchronization contacts on the camera shutter, with the automatic diaphragm. In this manner, the correct exposure is ensured, since the division of



the camera-to-object distance into the guide number is done automatically by the current-limiting effects of the first and second resistors.

3,638,544
SHUTTER OPERATING MECHANISM

Kiyoshi Kitai, 54, Tomihisa-cho, Shinguku-ku, Tokyo, Japan

Filed Dec. 12, 1969, Ser. No. 884,473
Claims priority, application Japan, Dec. 16, 1968, 43/91849
Int. Cl. G03b *7/08, 9/62*
U.S. Cl. 95—10 CT **10 Claims**

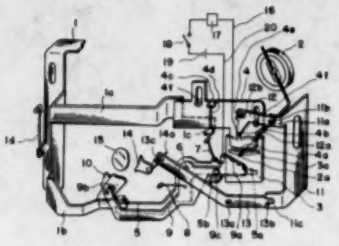
A shutter operating mechanism with an electrically controlled shutter has three modes of operation, namely an automatic mode in which the rate of opening of the shutter is controlled by a governor and the exposure time is controlled by a photocell sensing the brightness of the subject being photographed, a semiautomatic mode in which the aperture is set manually and the exposure time is controlled according to the setting for the aperture and the brightness of the subject, and a nonautomatic mode in which both the aperture and exposure time are set manually. Selection is made by concentric rings for controlling aperture and exposure time respectively. Each of the rings can be set for automatic operation or for a selected value.

3,638,545

DEVICE FOR CONTROLLING A FLASH CIRCUIT IN A CAMERA

Tatsuo Kobayashi, Kaizuka-shi, and Yoshikazu Hasegawa, Osaka-shi, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed July 30, 1969, Ser. No. 845,951
Claims priority, application Japan, Aug. 7, 1968, 43/56247
Int. Cl. G03b 19/02
U.S. Cl. 95—11 R 3 Claims



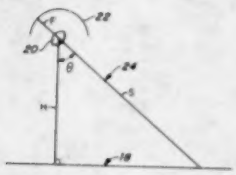
A device for controlling a flash in a camera in accordance with depression of the shutter release mechanism, a desired diaphragm setting, a predetermined range of movement of a distance adjusting mechanism, and a predetermined setting of an exposure control mechanism. The flash circuit is actuated when a first switch contact, moved by rotation of a pointer keeper mechanism in accordance with the setting of the distance adjusting mechanism, contacts a second switch contact, moved by rotation of a control lever rotated in accordance with the setting of the diaphragm control means.

3,638,546

CONSTANT SCALE PANORAMIC CAMERA

Robert Aaron Rubenstein, and John Thaxter Watson, both of Framingham, Mass., assignors to Itek Corporation, Lexington, Mass.

Filed Jan. 20, 1970, Ser. No. 4,251
Int. Cl. G03b 37/00
U.S. Cl. 95—15 10 Claims



A method and apparatus are disclosed for maintaining a constant image scale in a panoramic camera by modifying the size of the image at the film in a first direction as a function of the scan angle and in a second direction as that function squared of the scan angle.

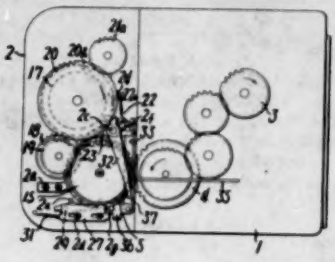
3,638,547

FILM WINDING APPARATUS IN CAMERA WITH INTERCHANGEABLE FILM BACK

Minoru Sekida, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Minamiku, Osaka, Japan

Filed Aug. 4, 1969, Ser. No. 847,233
Claims priority, application Japan, Aug. 16, 1968, 43/71043; Oct. 25, 1968, 43/78101; Apr. 23, 1969, 44/31618
Int. Cl. G03b 19/04, 17/42, 1/62
U.S. Cl. 95—31 R 10 Claims

A film winding apparatus comprises a reciprocal rotation member in a film back which is rotated interrelatedly with a winding knob in a camera body, a ratchet wheel to drive a film winding spool in the film back, a clutch pawl provided on the rotation member and another ratchet wheel which causes the clutch pawl to engage with or disengaged from the ratchet wheel for film winding. With the use of this apparatus



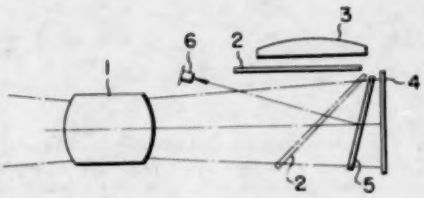
the film back can be mounted on the camera body irrespective of the state of shutter and film before or after effecting exposure. The apparatus also includes means for making multiple exposures.

3,638,548

EXPOSURE METER SYSTEM FOR CAMERAS

Makoto Kurihara, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Oct. 21, 1969, Ser. No. 868,123
Claims priority, application Japan, Oct. 29, 1968, 43/78714
Int. Cl. G03l 19/12
U.S. Cl. 95—42 1 Claim



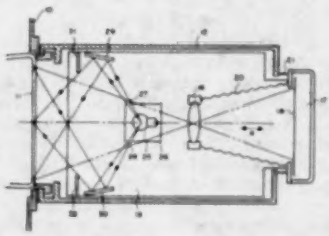
A device for measuring the intensity of exposure light by a photometric element placed so as to receive light reflected by a semitransparent reflecting mirror interposed between a hinged mirror of a single-lens reflex camera and a film plane thereof.

3,638,549

PHOTOGRAPHING SYSTEM FOR OSCILLOSCOPE

Kazu Suzuki, Tokyo, Japan, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 24, 1970, Ser. No. 13,391
Claims priority, application Japan, July 29, 1969, 44/71400
Int. Cl. G03b 27/54
U.S. Cl. 95—44 3 Claims



A pair of light beams are projected at an angle onto a display surface such as the display screen of a cathode-ray tube

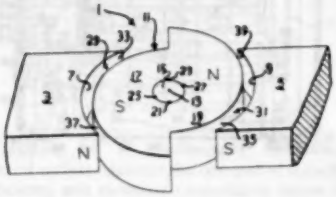
in order to provide regions of illumination of the display screen which move apart or together as the light beam source and photographic apparatus mounted to move with the light beam source is moved normal to the display surface. When the regions of illumination are just overlapping and the oscilloscope surface is evenly illuminated, the camera is in focus.

3,638,550

ROTARY ELECTROMAGNETIC ACTUATOR

John R. Hereford, 2400 Bluegrass Lane, Florissant, Mo.

Filed Dec. 30, 1966, Ser. No. 606,184
Int. Cl. G03b 9/10
U.S. Cl. 95—53 E **10 Claims**



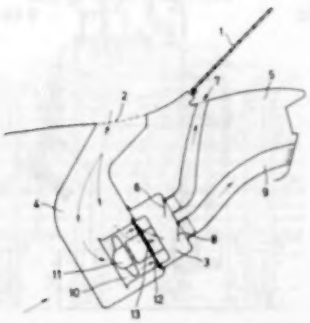
An electromagnetic actuator of the limited travel rotary-type having general servomechanism application. The actuator directly produces torque through the rotation of a rotor in a magnetic field, the rotor being formed of a pair of offset semicircular rotor portions.

3,638,551

FRESH AIR DEVICE FOR POWER VEHICLES

Wolfgang Morchen; Wolf Heinrich Hucho, and Lutz Joachim Janssen, all of Wolfsburg, Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Mar. 31, 1970, Ser. No. 24,070
Claims priority, application Germany, Apr. 1, 1969, P 19 16 638.2
Int. Cl. B60h 1/24
U.S. Cl. 98—2.16 **4 Claims**



A fresh air ventilator for power vehicles mounted below the windshield of the vehicle having an air inlet channel leading to a fan blower connected through flap valves to two outlet vents, one directed toward the inside of the windshield and the other into the interior of the vehicle.

3,638,552

AUTOMOBILE TRUNK LID WITH VENTILATION MEANS

Richard L. Dettloff, Harper Woods, and Victor Hlavaty, Royal Oak, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 9, 1970, Ser. No. 70,861
Int. Cl. B60h 1/24
U.S. Cl. 98—2.18 **4 Claims**

In preferred form, a trunk compartment deck lid for an automobile having a two-way ventilation system for the passenger compartment including an opening to atmosphere through the exterior of the automobile. The deck lid has spaced interior and exterior panels with an opening to atmosphere in the exterior panel and openings to the trunk compartment in the interior panel. Ribs formed in the interior panel and offset toward the exterior panel provide a curved flow path for separating water flow from airflow and causing the water to collect in a troughlike space near the rear edge of the deck lid. The ribs extend laterally between the troughlike space and the openings in the interior panel to prevent movement of water into the trunk compartment upon deceleration of the automobile.

3,638,553

METHOD OF TREATMENT OF COCOA BUTTER-CONTAINING MOLTEN CHOCOLATE MASS

Walter Kreuter, Essener Str. 104, Hamburg 62, Germany

Filed Sept. 4, 1969, Ser. No. 855,318
Int. Cl. A23g 1/00
U.S. Cl. 99—23 **11 Claims**

A method of treatment of substances containing cocoa butter, particularly chocolates, which is suitable for coating machines, wherein the material containing cocoa butter is first heated slightly above the highest melting point of cocoa butter, then subjected to a two stage cooling step whereby the material in first cooled to a range approximately 30° to 31° C. by a cooling medium having a temperature only slightly lower than this range and secondly cooling the mass to 28° to 29° C. by a cooling medium having a temperature only slightly lower than this range, and then heating the material to 33° to 34° C. and subjecting to further processing (i.e. coating). The material after this treatment is in a thermostable condition, has a substantially constant viscosity and may be stored indefinitely under stirring and when maintaining the temperature of the temperature of the material.

3,638,554

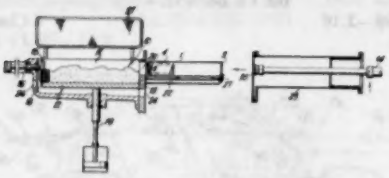
PRODUCTION OF COOKED MEATS

Harry Briggs Ackroyd, Bletchley, England, assignor to Scot Meat Products Limited, Bletchley, England

Filed Feb. 13, 1970, Ser. No. 11,267
Claims priority, application Great Britain, Feb. 13, 1969, 7,880/69
Int. Cl. A22c 18/00; A23b 1/00
U.S. Cl. 99—107 **7 Claims**

Cooked meat in units having uniform cross section and quality is prepared by arranging meat in a trough, evacuating the trough and compressing the meat therein into a unit of the desired cross section, sliding the unit of meat bodily into a container of the desired cross section while maintaining

vacuum and compression, and cooling and cooling the meat while maintaining compression thereon. A container is used comprising a tubular body containing two slidable plugs between which the meat is confined, and a spring maintaining pressure on the meat, and a meat press to fill the containers comprising an evacuable trough in which the meat is arranged, and oppositely acting rams of unequal force operative to compress the meat in the trough and slide it bodily from the trough into the container.



3,638,555

DEVICE FOR PRODUCING AN INFUSED LIQUID, PARTICULARLY COFFEE

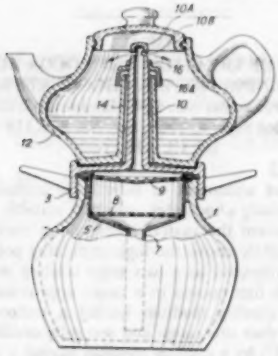
Luciano Mancioli, Altopascio, Lucca, Italy

Filed Dec. 29, 1969, Ser. No. 888,675

Claims priority, application Italy, Dec. 30, 1968, 4872 A/68

Int. Cl. A47j *31/057*

U.S. Cl. 99—303 **4 Claims**



A device for producing an infused liquid, particularly coffee, comprises a sealed vessel in which the liquid is heated. An outlet for the heated liquid from the vessel comprises a first tube extending upwardly from the bottom portion of the vessel into a cup which contains an infusible substance, for example ground coffee, and a second tube extending upwardly from the container and having apertures through which infused liquid is discharged. The tube extends through a tubular inlet of a container removably supported on the vessel, infused liquid discharged from the tube being collected in the container. In order to prevent penetration of liquid between the tube and the inlet, the upper end portion of the tube extends through a passage in a sealing element which acts as a shield to prevent such penetration, both the upper end portion of the tube and the passage in the element being tapered. The element which has a depending skirt surrounding the end portion of the inlet, is removed by the end of the inlet from the tube upon removal of the container from the vessel, and is replaced upon the tube upon replacement of the container.

3,638,556

TOASTER

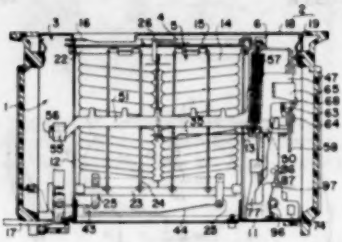
Hosei Sato, Nishinomiya; Katsuyuki Natsumeda, Shijonawate, and Kaichi Murakami, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan

Filed Aug. 28, 1970, Ser. No. 67,960

Claims priority, application Japan, Sept. 2, 1969, 44/70861

Int. Cl. A47j *37/08*

U.S. Cl. 99—329 **6 Claims**



A toaster so designed that when a slice of bread has been toasted, the end of the toasting operation is detected by a toasting detector and a weight is dropped by the motion of the toasting detector, so that a bread carrier frame latching mechanism is released by the dropping force of the weight, whereby the bread carrier frame is returned from a bread toasting or lower position to a bread removing or upper position.

3,638,557

MACHINE FOR PREPARING MASHED POTATOES

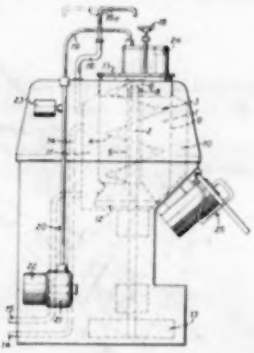
Per-Henrik Ljung, Skolgatan 20, 211 52 Malmo, Sweden

Filed July 14, 1969, Ser. No. 841,364

Claims priority, application Sweden, Jan. 7, 1969, 116/69

Int. Cl. A47j *27/17*

U.S. Cl. 99—348 **4 Claims**

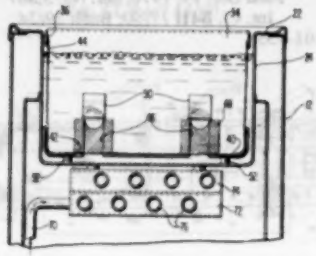


A method of preparing mashed potatoes from a powdery or flaky potato material, comprising mixing the material and the liquid, subjecting the mix to a superatmospheric gas pressure, and maintaining said pressure during the time the mix is kept in readiness for serving and also during the intermittent dispensing of the mix.

3,638,558
COOKING APPARATUS FOR COMESTIBLES IMMERSED IN HEATED OIL

Alden H. Bennett, and Leslie G. Williams, both of Miami, Fla., assignors to Burger King Corporation

Filed Mar. 26, 1970, Ser. No. 22,888
Int. Cl. A47j 37/12
U.S. Cl. 99—408 14 Claims

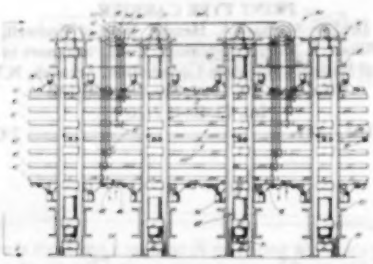


Heated cooking oil is continuously circulated from laterally spaced outlets adjacent the one end of a cooking pot through a heating unit mounted immediately below the bottom of the cooking pot and returned to the cooking pot through laterally spaced inlets opening through the wall at the opposite end of the cooking pot. A fuel burner is disposed in the lower open end of a combustion chamber, such chamber enclosing the heating unit and a substantial part of the lower end of the cooking pot. A removable basket for comestibles to be cooked constructed of imperforate sheet material has limited portions thereof cut out and covered by perforate material and the forward front wall of such basket is slotted and covered with perforate material to enable safe insertion and removal of such basket from the cooking pot during continuous circulation of the hot cooking oil.

3,638,559
PRESS

Russell A. Parker, Pasadena, Calif., assignor to L & F Machine Co., Huntington Park, Calif.

Continuation-in-part of application Ser. No. 845,341, July 28, 1969, now abandoned, which is a continuation-in-part of application Ser. No. 801,622, Feb. 24, 1969, now abandoned. This application Mar. 9, 1970, Ser. No. 17,690
Int. Cl. B30b 7/02, 15/34
U.S. Cl. 100—93 P 20 Claims

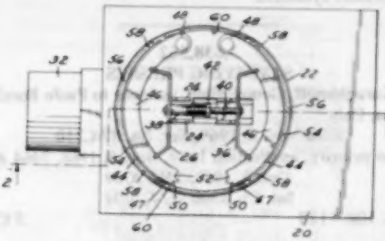


A hydraulic press having a stationary center platen secured to a supporting framework and a plurality of movable platens disposed above and below the center platen. The movable platens are supported from the framework by a differential gearing system comprised of fixed-length roller chains secured to the platens and engaged with variable-sized overhead sprocket wheels mounted on a common shaft. The weight of each upper platen is counterbalanced by a corresponding lower platen.

3,638,560
APPARATUS FOR BONDING BRAKE BLOCKS

Thomas E. Morgan, Sr., and Thomas E. Morgan, Jr., both of 4815 Bellevue, Detroit, Mich.

Filed Dec. 29, 1969, Ser. No. 888,650
Int. Cl. B02c 11/08
U.S. Cl. 100—93 PB 15 Claims

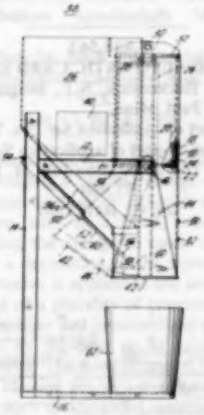


An apparatus for bonding brake blocks to brakeshoes and particularly that type of brake block which is used for large vehicles and has a changing radial dimension such that it is thicker at one end than the other. The concept includes a very high pressure system using a pressure band which encircles two opposed brakeshoes, these being separated by manually operated spreaders, there being an improved means for bridging the bands at the opposed ends of the brakeshoes to insure positive contact with, and uniform pressure on, the brake blocks in relation to the shoes during the bonding action, this means including relief holes in the band and a stress absorbing plate overlying the bridging portion to transmit force while eliminating destructive distortion and a strain absorber for lateral pressure distribution.

3,638,561
REFUSE COMPACTOR

Howard Price, Kings Point, N.Y.; Seymour Wallick, Clifton, N.J., and Irwin Math, Beechhurst, N.Y., assignors to International Patents & Development, Kings Point, N.Y.

Filed Feb. 24, 1970, Ser. No. 13,705
Int. Cl. B30b 15/30, 15/32
U.S. Cl. 100—215 13 Claims



A vertical refuse compactor in which the ramming piston used to compact the refuse also ejects the refuse from the

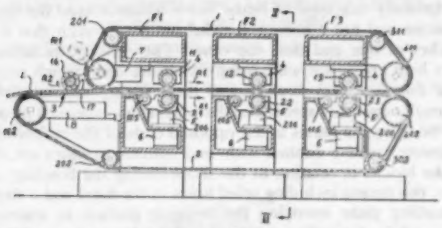
compactor after it has been compressed into a reduced bale. A vertical tubular housing is held in place through structural members and contains the hydraulically operated ramming piston. Refuse enters the ramming chamber from a hopper and through an opening below the piston when retracted. A door at the bottom of the tubular cylinder serves simultaneously as the ejecting door and the base upon which the refuse is compacted. The door is pivotally mounted and operated through hydraulic cylinders supported by the structural members. A refuse receiving can or container located beneath the ejecting door receives the compacted bales of refuse after the door has been swung open through actuation of the respective hydraulic cylinders.

3,638,562

SAMMYING PRESSES

Milin Karaghiosoff, Genoa, Italy, assignor to Paolo Bocciardo, Genoa, Italy

Filed Nov. 5, 1969, Ser. No. 874,340
Claims priority, application Italy, Nov. 8, 1968, 7464 A/68; Oct. 7, 1969, 7365 A/69
Int. Cl. B30b *9/24, 5/04*
U.S. Cl. 100—118 **5 Claims**



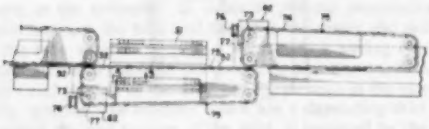
This invention relates to continuous sammying presses, i.e., machines for squeezing moisture from hides, leather or the like. Ordinarily, such presses employ endless revolving belts made of porous material, such as felt, and have two straight runs, one above the other, between which the hide is sandwiched. The belts are moved in the same direction and at the same speed between cooperating press rolls that are pressed one against the other. In order to reduce pressure on the belts, which is brought about by the use of the normal single pair of press rolls, the invention provides that there shall be at least two pairs of sequentially arranged press rolls. This arrangement enables the pressure at any one point to be reduced but without, however, increasing the time of processing.

3,638,563

HIGH-SPEED AUTOMATIC CARD EMBOSSER

Jacob H. Drillick, Hackensack, N.J., assignor to Data Card Corporation, St. Paul, Minn.

Continuation-in-part of application Ser. No. 769,245, Oct. 21, 1968, Continuation-in-part of application Ser. No. 861,432, Sept. 26, 1969. This application July 24, 1970, Ser. No. 57,960
Int. Cl. B41j *7/40*
U.S. Cl. 101—18 **3 Claims**



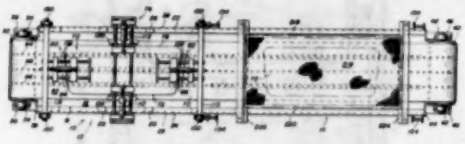
A machine for embossing credit cards having data reading means, a computer controlling selectively operable embossing punches corresponding to each character, and indexing means for moving the card past each embossing punch.

3,638,564

METHOD AND APPARATUS FOR SILK SCREENING A PATTERN ON AN UNDERLYING SUBSTRATE

Bernard H. Prange, and Dean W. Gintert, both of Hollidaysburg, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 19, 1970, Ser. No. 3,867
Int. Cl. B41f *17/00;* **B65h** *29/24*
U.S. Cl. 101—35 **10 Claims**



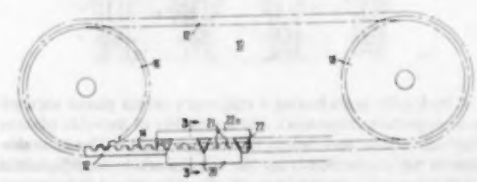
An elongated worktable has an endless foraminous conveyor belt with an upper conveying run supported on the tabletop surface. The worktable has an orienting station and a coating station. A glass sheet is conveyed by the conveyor belt to the orienting station where a pair of edge engaging members and a pair of end engaging members engage the glass sheet and orient the glass sheet longitudinally and laterally on the conveyor belt. A positive air pressure is applied upwardly through the conveyor belt to urge the glass sheet away from the upper surface of the conveyor belt while the engaging members are orienting the sheet. After the sheet is oriented, the positive upwardly flowing air pressure is stopped and a suction is applied to the conveyor belt to engage the oriented sheet to the upper conveying run of the belt. The conveyor belt, with the glass sheet engaged thereto, is moved a precise measured distance along the work table to the coating station. A silk screen with a predetermined pattern thereon is lowered onto the upper surface of the oriented glass sheet after the upper surface of the silk screen has been flooded with a coating material. A wiper is moved across the upper surface of the silk screen and coating material is forced therethrough onto the upper surface of the glass sheet. While the sheet is being coated, it remains oriented and engaged to the conveyor belt by suction. After the sheet is coated, the silk screen is raised and the coated glass sheet is conveyed along the table while the upper surface of the silk screen is again flooded with coating material.

3,638,565

PRINT TYPE CARRIER

John E. Drejza; Michael A. Hendel, both of Endwell, N.Y., and William F. Morgan, Saratoga, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

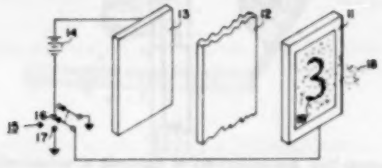
Filed Apr. 29, 1969, Ser. No. 820,206
Int. Cl. B41j *1/20*
U.S. Cl. 101—111 **2 Claims**



A type carrier comprises a flexible, toothed timing belt having U-shaped type carrier members which are attached to

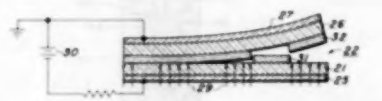
the belt by pins through the legs of each member on either side of a belt tooth and which have flexible supports secured thereto each with a type character at the free end.

3,638,566
STENCIL RECORDING APPARATUS
Robert B. Greenly, Santa Clara, Calif., assignor to Singer-General Precision, Inc., Binghamton, N.Y.
Filed Dec. 31, 1968, Ser. No. 788,150
Int. Cl. B41f 15/00
U.S. Cl. 101—114 4 Claims



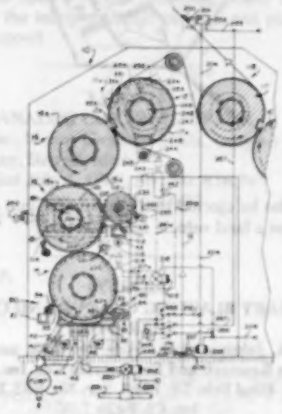
The device of this invention uses electrostatic recording to apply original titles, legends, or other indicia to discrete record receivers. The system includes changeable stencils which, for the purposes of this description, are constructed as counters. The desired information is set up, a voltage is applied between the stencil and an electrode behind a record receiver, ionized pigmented particles are attracted through the stencils to the record receiver, and the record receiver is moved to a fixing station. By rendering the individual items of information changeable, any desired information within the range of the apparatus can be applied to an appropriate record receiver.

3,638,567
METHOD OF PREPARING AND UTILIZING A GRAVURE PRINTING MASTER
Lewis E. Walkup, and Rexford W. Jones, both of Columbus, Ohio, assignors to Xerox Corporation, Rochester, N.Y.
Filed May 13, 1969, Ser. No. 834,576
Int. Cl. B41m 1/10, 5/00; G03g 13/06
U.S. Cl. 101—170 10 Claims



There is disclosed a method of preparing a gravure printing master wherein a photosensitive imaging composition is interpositioned between two substrates to form a dual electrode imaging configuration. Upon selective exposure to electromagnetic radiation in the presence of an electric field and subsequent separation of the configuration complementary images are formed on the respective surfaces. At least one of said images may then be transferred selectively to a uniformly prepared gravure member so as to selectively occlude specific areas and produce the gravure master.

3,638,568
ROTARY NEWSPAPER PRINTING PRESS HAVING AUTOMATIC INTERRUPTERS FOR PRESS CYLINDERS
Wallace H. Granger, P.O. Box 157, Kentfield, Calif.
Continuation-in-part of application Ser. No. 650,453, June 30, 1967, now abandoned, Continuation-in-part of application Ser. No. 735,388, June 7, 1968, now abandoned, Continuation-in-part of application Ser. No. 784,599, Dec. 18, 1968. This application Aug. 7, 1970, Ser. No. 61,985
Int. Cl. B41f 13/40, 31/36, 33/14
U.S. Cl. 101—219 7 Claims

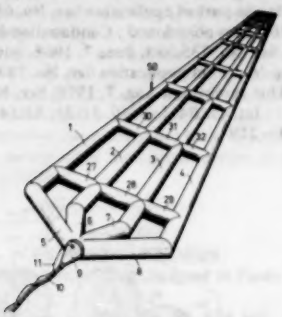


A rotary printing press is provided including an impression cylinder and a plate cylinder and wherein a continuous web passes between the impression and plate cylinders. Automatic means are provided to move two of the cylinders in the event of a break in the web whereby contact between all cylinders of the press is broken and damage from excessive windup of the broken web on one or more cylinders is avoided. Upon breakage of the web of paper the continuous flow of ink to the press is also stopped.

3,638,569
METHOD AND EQUIPMENT FOR THE ELIMINATION OF MINE BLOCKADES
Frank Rudolf Thomanek, Sandizell, Germany, assignor to Messerschmitt-Bolkow Gesellschaft Mit Beschrankter Hoftung
Filed July 28, 1969, Ser. No. 845,148
Claims priority, application Germany, Aug. 1, 1968, P 17 03 933.7
Int. Cl. F42d 3/00
U.S. Cl. 102—22 11 Claims

A method for eliminating mine blockades or similar obstacles comprises arranging a blasting charge in the form of an explosive gas or gas mixture or a liquid and/or solid component-gas mixture, such as a foam, over the area to be cleared; and igniting the charge to cause a detonation over the area to effect a detonation of the mines to render them harmless. The explosive is applied to the area by means of an elastic grid formed of a plurality of interconnected hose elements which are gastight and pressuretight and which may be unwound such as by inflation so as to extend outwardly across the mined area. The hose elements of the grid form a receptacle for the blasting gases or the explosive gas liquid or gas solid mixtures such as a foaming material forming the explosive. Alternatively the explosive may be applied to the minefield by means of a rocket or other vehicle containing the explosive foam or its ingredients through a discharge nozzle for ejecting and spreading the explosive over the

blockaded area. The recoil from the ejected explosive is utilized to propel the rocket forward and or upward. The explo-



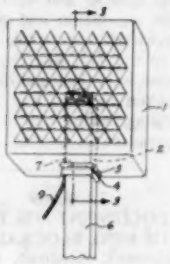
sive may also be ejected through a nozzle gun connected to a container on a land vehicle such as a tank.

3,638,570

SECONDARY BLASTING CHARGE AND CONTAINER THEREFOR

Raymond A. Johnson, Salt Lake City, Utah, assignor to Intermountain Research and Engineering Co., Inc.

Filed Feb. 28, 1969, Ser. No. 803,206
Int. Cl. F42b *3/00*
U.S. Cl. 102—24 **1 Claim**



A secondary blasting charge for removing "hang-ups" of ore, protruding rock formations, and other problem formations in mines and other blasting areas, comprises a molded plastic container designed to be supported on a pole or prop stick and capable of holding a blasting charge of adequate size and suitable configuration. A hole or socket element, which can be formed integrally with the container, is provided for receiving a supporting stick or pole. It serves also to house a primer or booster in detonating position within the charge and can serve also as a closure for a filler opening.

3,638,571

RECOILLESS PRACTICE CARTRIDGE

Heinz Gawlick, and Rudolf Stahlmann, both of Furth, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Sept. 6, 1968, Ser. No. 757,902
Claims priority, application Germany, Sept. 6, 1967, D 54039
Int. Cl. F42b *5/22*
U.S. Cl. 102—41 **13 Claims**

The recoilless practice cartridge is to be fired from the subcaliber barrel insert of a recoilless firearm and is provided with a projectile having a rearwardly opening central bore communicating with radial bores opening against an annular propellant charge surrounding a portion of the projectile. The practice cartridge case is provided with a bottom piece having one or more bores for receiving a detonator for igni-

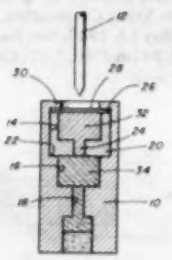
tion the propellant charge by passing a flame through the bores of the projectile and for thereafter conducting the propellant gas rearwardly through the cartridge case to counteract the recoil of firing the projectile from the cartridge case. Tamping means are provided for the propellant charge on the projectile and for the bottom piece bores.

3,638,572

DELAY TRAIN FOR ORDNANCE FUSE

Vincent J. Menichelli, Panorama City, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 18, 1969, Ser. No. 800,203
Int. Cl. F42c *9/10*; **F42b** *1/04*; **F42c** *19/08*
U.S. Cl. 102—75 **2 Claims**



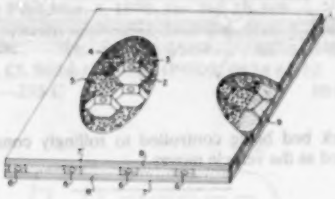
A delay train for an ordnance fuse having a body with two tandem chambers at the front end communicating via an axial bore with the main charge located in the rear end. A cup with an apertured bottom fits in the first of the tandem chambers and, except for the aperture, closes the second of the tandem chambers. A primer mix fills the cup and a delay composition fills the second chamber. Initiation of the primer mix by a firing pin is propagated via the cup aperture to the delay composition which reacts at a known slow rate, thus contributing the greater part of the time delay. Lead azide in the axial bore is initiated by the delay composition and, in turn, initiates a length of pyrocore along which the initiation is propagated to a main charge.

3,638,573

SELF-DESTRUCTIBLE HONEYCOMB LAMINATES

Hugh W. Campbell, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Mar. 25, 1968, Ser. No. 715,761
Int. Cl. F42b *11/24*
U.S. Cl. 102—90 10 Claims



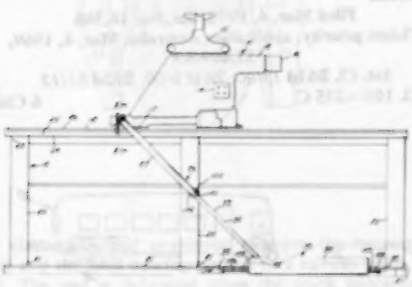
This disclosure is directed to on-command, self-destructible, laminated honeycomb structures, e.g., printed circuit assemblies, having a honeycomb core the polygonal cells of which contain a material capable of rapid yet nonexplosive combustion e.g., incendiary or pyrotechnic material, and wherein the cell walls are substantially perpendicular to the longitudinal axis of substantially parallel facing sheets which can be secured directly or indirectly thereto. One of the facing sheets can constitute or contain a printed circuit and a portion or all of the incendiary material can be encapsulated to render it inactive at ambient conditions until the desired time for ignition. Ignition wells and igniters can be provided to communicate with a portion of the incendiary composition and the honeycomb cell walls can have small openings to interconnect some or all of the cells for migration of gases and flame propagation therebetween. An edge sealant, e.g., potting composition, can be used to aid in insulating the incendiary material from exposure to degradative influences and directionally channel the burning to the major desired area(s) to be destroyed, e.g., the facing sheet area(s) containing the printed circuitry.

3,638,574

PLATFORM FOR CLOTH-LAYING MACHINES

Stephen Paterson, Forest Hills, N.Y., assignor to Cutting Room Appliances Corp., New York, N.Y.

Filed May 27, 1970, Ser. No. 40,765
Int. Cl. B65h *29/00*
U.S. Cl. 104—1 4 Claims



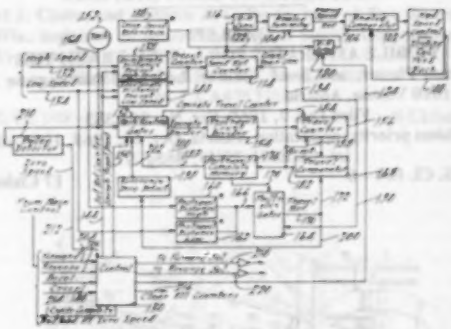
A selectively operable platform interconnected to a cloth-laying machine carriage and the cloth-laying table upon which it is supported for reciprocation with the former and with respect to the latter, whereby an operator may stand upon the upper surface of said platform to manipulate controls upon said carriage during movement. The platform is supported upon wheels in direct contact with a supporting floor and has separate wheels engaging a guiding track upon the side of the table. Interconnection with the carriage is by a collapsible self-storing bar which is operative position is angled at approximately 45° with respect to the horizontal. In inoperative position, the bar is stored within a recess in the platform, and a major portion of the platform may be rotated about a horizontal axis to be latched in a vertical orientation to means on a side of said table, whereby it may be out of the way when not required. Bumper means is provided on each end of the platform which telescopes on contact with an object lying in the path of travel of the platform, this motion being utilized to open a circuit providing power to the carriage, whereby the interconnected carriage and platform are immediately stopped.

3,638,575

ANALOG CONTROL SYSTEM

Ralph R. Griner, Mount Clemens, Mich., assignor to Palmer-Shile Company, Detroit, Mich.

Filed July 3, 1969, Ser. No. 838,767
Int. Cl. B65g *43/00*
U.S. Cl. 104—1 71 Claims



A feedback control system for use in connection with automatic material-handling apparatus for controlling the acceleration and/or deceleration curve of a movable material-handling assembly, as for example, an automatic or semiautomatic robot used in conjunction with delivering and retrieving material from a storage warehouse, wherein the distance from a fixed or variably selectable point is sensed and utilized to generate a speed curve for controlling the incremental variation in speed of the material-handling apparatus up to a preselected maximum speed or down to zero speed.

3,638,576

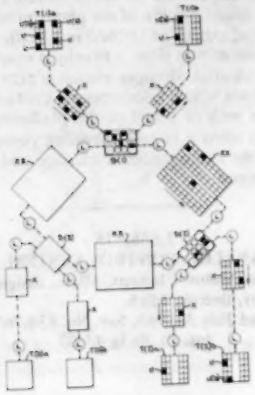
TRANSFER SYSTEM

Peter P. Schauffler, 7701 Cresheim Road, Philadelphia, Pa.

Filed Nov. 12, 1969, Ser. No. 876,004
Int. Cl. B61b *1/00*
U.S. Cl. 104—1 8 Claims

In a transportation system which interconnects multiple origin and destination points, coupled seat and baggage units for individual passengers are carried by different types of vehicles. Automatic sorters at transfer points uncouple and

sort and recouple these units for transfer from one type of vehicle to another, so that a passenger and his baggage can



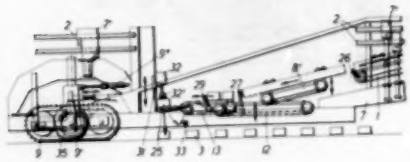
travel from his origin to his destination on several different vehicles without leaving his assigned unit.

3,638,577

MOBILE APPARATUS FOR LAYING TRACK TIES

Franz Plasser, and Josef Theurer, both of Johannesgasse 3, 1010 Vienna, Austria

Filed Oct. 7, 1969, Ser. No. 864,383
Claims priority, application Austria, Oct. 18, 1968, 10087/68
Int. Cl. E01b *29/13;* **B65g** *7/12*
U.S. Cl. 104—6 **17 Claims**



In a mobile track renewal apparatus which includes a series of cooperating tie conveyors leading to and from the track section where ties are to be picked up and/or laid, control means is arranged in the tie conveyor path and actuatable by a tie in the path for controlling the movement of selected conveyors.

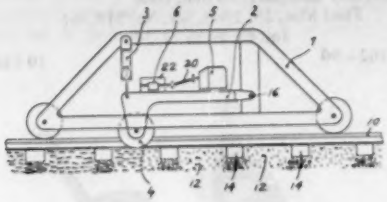
3,638,578

APPARATUS FOR CONSOLIDATING A TRACK BED

Heinrich Helgemeir, Munich, Germany, assignor to Robel & Co., Munich, Germany

Filed Apr. 16, 1969, Ser. No. 816,548
Claims priority, application Germany, Apr. 24, 1968, P 17 59 351.0
Int. Cl. E01b *27/16*
U.S. Cl. 104—12 **1 Claim**

Apparatus for consolidating a track bed comprising a vehicle movable along the track with at least one pressure-applying wheel carried thereby, the engagement of the wheel with



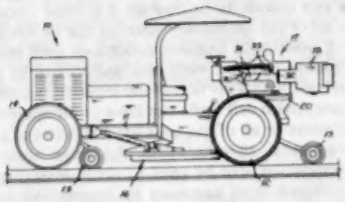
the track bed being controlled to rollingly consolidate the track bed as the vehicle moves.

3,638,579

CONVERTIBLE RAIL-HIGHWAY SHUNTING LOCOMOTIVE

William James Yard, Cavan, Australia, assignor to Aresco Trak-Chief Proprietary Limited, Cavan, Australia

Filed Nov. 12, 1969, Ser. No. 875,758
Int. Cl. B61c *13/00;* **B61d** *15/00;* **B61f** *9/00*
U.S. Cl. 105—26 R **5 Claims**



A shunting vehicle for positioning trucks on a railway line wherein the coupling is rotatable, not about a central pin as an axis but by movement guided by angled slots to thereby throw the center of rotation forwardly and avoid displacement of the shunting vehicle wheels from the rails.

3,638,580

CONVERTIBLE RAIL-HIGHWAY VEHICLE

William James Yard, Cavan, Australia, assignor to Aresco Trak-Chief Proprietary Limited, Cavan, South Australia, Australia

Filed Mar. 4, 1970, Ser. No. 16,368
Claims priority, application Australia, Mar. 4, 1969, 51,409/69
Int. Cl. B61d *15/00;* **B61f** *9/00;* **B62d** *61/12*
U.S. Cl. 105—215 C **6 Claims**

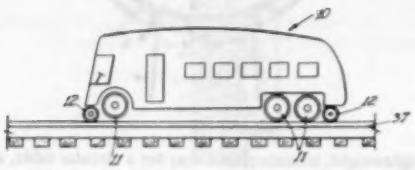
Means for retaining flanged wheels in contact with rails on a convertible rail-highway vehicle in which traction is effected through the normal highway-engaging pneumatic tired wheels riding on the rails, utilizing a load transfer arm pivoted to the chassis of the vehicle in such a way that a por-

tion of the weight of the vehicle is applied to the flanged wheels thereby reducing danger of derailment.

3,638,581
CONVERTIBLE RAIL-HIGHWAY VEHICLE TILT CONTROL

William James Yard, Cavan, Australia, assignor to Aresco Trak-Chief Proprietary Limited, Cavan, Australia

Filed Mar. 4, 1970, Ser. No. 16,369
Claims priority, application Australia, Mar. 4, 1969, 51,408/69
Int. Cl. B61d *15/00*; **B61f** *9/00*; **B62d** *61/12*
U.S. Cl. 105—215 C **10 Claims**

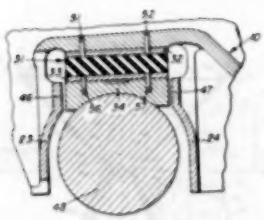


Tilt control means for a rail vehicle effective in making the vehicle chassis tilt upwardly in the direction of displacement while negotiating a curve so that the vehicle leans into the curve, by utilizing pivoted control arms between the chassis and the vehicle wheels, the control arms diverging downwardly.

3,638,582
RESILIENT BEARING MOUNTING

Joseph A. Beebe, Columbus, Ohio, assignor to The Buckeye Steel Castings Company, Columbus, Ohio

Filed Dec. 3, 1969, Ser. No. 881,641
Int. Cl. B61f *5/30, 5/38, 15/02*
U.S. Cl. 105—218 R **2 Claims**



An elastomeric pad positioned between the bearing assembly and the load bearing portion of a railway truck side frame. The pad is deformed when the truck negotiates a curve to accommodate a nonparallel condition of the axles and thereby avoid slippage between the wheels with respect to the rails. The elastomeric element is stressed during such displacement of a truck axle and this energy serves to restore the axle to a position at right angles to the track when the truck proceeds onto a track section which is tangent to the curve.

3,638,583
APPARATUS FOR BAKING DOUGHNUTS A GOODY-ER DONUT BAKER

Vera M. Goodier, and Kenneth C. Goodier, both of 135 12th St. S.E., South East Puyallup, Wash.

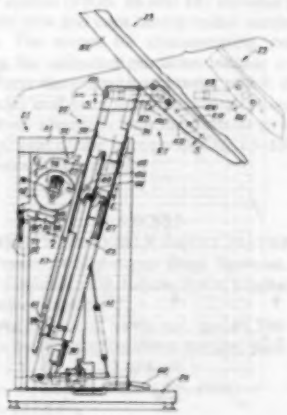
Filed Feb. 4, 1969, Ser. No. 796,443
Int. Cl. A47j *37/01*
U.S. Cl. 249—122 **1 Claim**

Apparatus for producing donuts by a baking rather than frying process in the form of a baking tin having a plurality of spaced apart wells or bowllike member, each with a prong extending axially therein. In use each well receives a proper amount of baking dough with the prong assisting by maintaining a hole in the center of the dough. After baking, each well contains a donut which can be easily removed for further decoration, icing and/or eating.

3,638,584
DRAFTING TABLE CONSTRUCTION

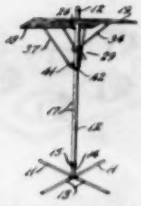
Earl J. Cisler, and William A. Gelbuda, both of Two Rivers, Wis., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed May 21, 1969, Ser. No. 826,478
Int. Cl. A47f *5/12*
U.S. Cl. 108—6 **8 Claims**



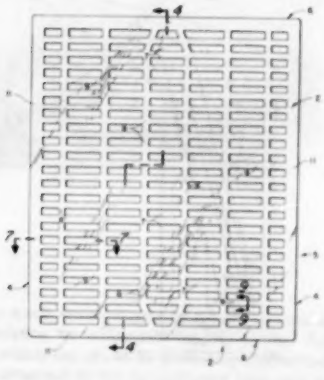
A drafting table including a pedestal, support columns mounted on said pedestal for generally vertical movement, and a drafting board mounted for tilting movement on the upper end of said support columns. The tiltable mounting for the drafting board includes pivotally connected first and second parts, the first part being secured to the board and the second part being secured to the support columns by a fastener and wedge arrangement. A counterbalancing mechanism is provided between the pedestal and the support columns to assist in raising and lowering the columns and the board. The mechanism includes means for adjusting the amount of counterbalancing force by braking or anchoring one end of a spring and raising or lowering the column assembly.

3,638,585
COMBINATION LECTERN AND TABLE
James Clyde Futrell, 1007 Drake St., Roanoke Rapids, N.C.
Filed Nov. 18, 1969, Ser. No. 877,734
Int. Cl. A47f 5/12
U.S. Cl. 108—9 1 Claim



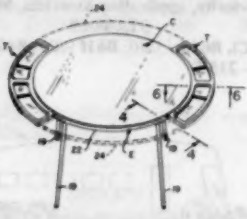
A combination lectern and table having a two-part base and a two-part top with a supporting shaft. Each of the halves of the top may be disposed horizontally or at a desired angle, the entire table may be adjusted vertically and the base may be supported on one-half and both the base and the top may be detached from the supporting post or column.

3,638,586
PALLET
Anthony E. Elshout, San Francisco, Calif., assignor to Crown Zellerbach Corporation, San Francisco, Calif.
Filed June 5, 1970, Ser. No. 43,682
Int. Cl. B65d 19/18
U.S. Cl. 108—58 5 Claims



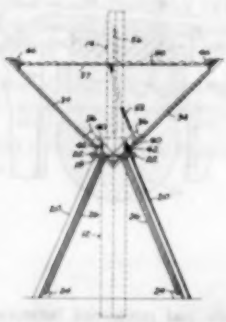
A four-way entry pallet of a construction enabling it to be made of molded plastic material to provide lightness without sacrifice of strength, comprises top and bottom walls, two pairs of opposite sidewalls having openings for receiving tines of a lift fork, reinforcing connecting columns between the top and bottom walls, and openings in the top and bottom walls, providing lightness. The top wall comprises T-shaped reinforcing ribs which provide strength and rigidity. Some of the openings in the bottom wall are enlarged to accommodate supporting wheels on tines of a lift fork, and have opposite bevelled edges providing ramps for such wheels; and lower edges of openings in the sidewalls are also bevelled to provide such ramps.

3,638,587
TRAY FOR GAME TABLE
Tim M. Uyeda, S. San Gabriel, Calif., and Harry W. Thurman, Murfreesboro, Tenn., assignors to Samsonite Corporation, Denver, Colo.
Filed Feb. 19, 1970, Ser. No. 12,612
Int. Cl. A47b 1/00
U.S. Cl. 108—66 9 Claims



A lightweight, arcuate plastic tray for a circular table, a series of which may be secured to the edge of the table to outstand therefrom. Each tray includes a suitable arrangement of depressed sections or wells to hold poker chips, glasses and food dishes. The tray has radial ribs which engage the outside of a depending edge structure of the table and an inside lip adapted to rest on the edge structure. The tray is reinforced at its underside by a framework adapted to rigidify the same and permit it to be securely connected to the table, as by a latch engaging the inside of the edge structure. This framework includes a radial bar, attached to the underside of the center of the tray and adjacent the inner end of which the latch is mounted, and a chord bar attached centrally to the radial bar and at each end to the underside of the tray. The three points of attachment of the framework, in a triangular arrangement, rigidify the tray so that it may be formed of thinner plastic and thus appreciably reduce its weight.

3,638,588
COLLAPSIBLE STOOL
Bobby R. Abbott, 3808 S.W. 40th Pl., Oklahoma City, Okla.
Filed Nov. 19, 1969, Ser. No. 877,941
Int. Cl. A47c 4/30
U.S. Cl. 108—128 4 Claims



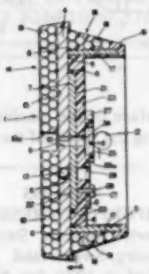
A plurality of part-cylindrical legs are pivotally joined to a like plurality of struts so that the legs and struts extend away from each other in diverging directions for respectively resting on the earth and supporting a seat. When the struts are in a collapsed position they form a cylindrical seat nesting tube telescopically received by the tube formed by the legs when collapsed.

3,638,589

PROTECTIVE DOOR STRUCTURE

James D. Shoop, Canton, Ohio, assignor to Diebold, Incorporated, Canton, Ohio

Filed Feb. 2, 1970, Ser. No. 7,506
Int. Cl. E05g 1/02
U.S. Cl. 109—76 14 Claims



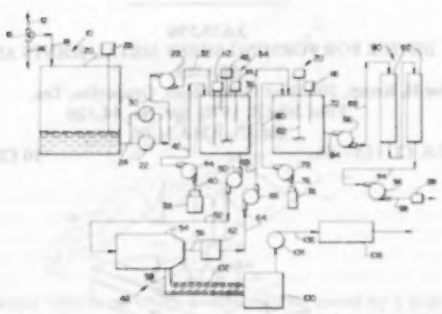
The protective door structure for filing cases, safes, vaults, and the like to protect against illegal, forced or surreptitious entry has a central body portion composed of a metal plate with a metal ring secured thereto with a casehardened steel plate located within the ring. A matrix of urethane plastic material completely encases the central body portion of the door and forms the external door shape. The plastic portions exposed to attack have a tight pattern of hardened steel balls or shot embedded in the matrix. The entire assembly is formed with properly spaced openings for housing the lock mechanism.

3,638,590

WASTEWATER TREATMENT SYSTEM

William F. Roberts, and Edmund L. Kaminsky, both of 150 Strafford Road, Wayne, Pa.

Filed Sept. 18, 1970, Ser. No. 73,510
Int. Cl. F23b 1/28
U.S. Cl. 110—7 16 Claims



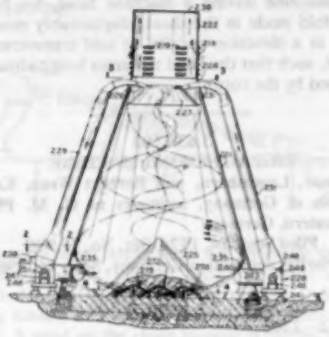
In a shipboard system, wastewater is withdrawn from a storage tank and is comminuted to reduce the size of waste solids. Coagulant is added, and the wastewater is centrifuged. Solid wastes are incinerated. The liquid wastes are disinfected and dissolved organic material is adsorbed in activated carbon. An effluent of tertiary quality is discharged.

3,638,591

BURNER HAVING MEANS INCLUDING UNDERFIRE AIR MEANS FOR ELIMINATING SMOKE

Jerry S. Lausmann, P.O. Box 1608, Medford, Oreg.

Continuation-in-part of application Ser. No. 828,113, May 26, 1969. This application Apr. 13, 1970, Ser. No. 27,576
Int. Cl. F23g 7/00
U.S. Cl. 110—7 A 11 Claims



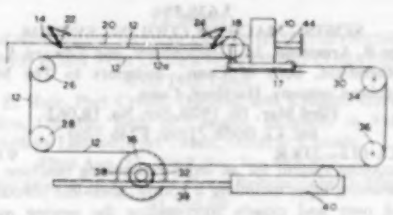
Tepee burners having means for concentrating, collecting and reintroducing unburned particles are provided with underfire air systems which uniformly distribute air to the fire piles. An early underfire air system (FIG. 1) includes inclined pipe sections having downwardly directed nozzle tubes. A later underfire air system (FIG. 10) includes nozzles having partially embedded, slotted burner pots and caplike grates having diffuser plates setting in the slots in the pots. A latest underfire air system (FIGS. 16 and 18) includes partially embedded burner pots and caps having radial nozzles positioned on the pots. The means for concentrating, collecting and reintroducing the unburned particles include crown collectors from which ducts lead to blowers which draw the unburned particles and gases from the collectors and blow them with ambient air chordally into the burners so as to aid the coriolis effect, one of the burners (FIGS. 13–15) having adjustable blower outlet nozzles.

3,638,592

FOLDING OF FLEXIBLE SHEET MATERIALS

Leslie Alva Fryatt, 24 Highergate Road, Huncoat, Accrington, Lancashire, England, J. H. Fenner & Co. Limited, Marfleet, Hull, Yorkshire, England

Filed June 19, 1970, Ser. No. 47,799
Claims priority, application Great Britain, June 27, 1969, 32,495/69
Int. Cl. D05b 3/00, 35/02
U.S. Cl. 112—121.14 14 Claims



The present invention provides apparatus for forming a fold in a length of flexible sheet material comprising a

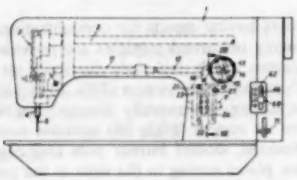
horizontal support for supporting a length of flexible sheet with a portion thereof to be folded lying over a transverse edge of the support, a horizontal cord arranged above and beyond said edge of the support, means for downwardly deforming the cord so that at least a portion thereof lies below the level of said support beneath said portion of the sheet to be folded when a sheet is present on the support, and means for tensioning the cord against the action of said deforming means to straighten the cord and to thereby raise said portion of the sheet, forming a fold therein around the cord. The apparatus is intended to be used primarily in a hemming machine having a machine head, for forming a seam in a fold made in the sheet, displaceably mounted for movement in a direction parallel to said transverse edge of the support, such that the head traverses longitudinally along a fold formed by the cord.

3,638,593

ZIGZAG SEWING MACHINE

Kurt Vollmar, Lambsborn, and Herbert Wenz, Kaiserslautern, both of Germany, assignors to G. M. Pfaff AG., Kaiserslautern, Germany

Filed Sept. 14, 1970, Ser. No. 71,996
Claims priority, application Germany, Sept. 16, 1969, P 19 46 700.6
Int. Cl. D05b *27/00*
U.S. Cl. 112—210 **3 Claims**



Zigzag sewing machine having a setting member controlled by a rotatably driven control disk, the position of which determines the magnitude and direction of the feeding movements of the feed dog, and a setting arrangement having a setting shaft connected in the transmission train between the scanning member of the control disk and the setting member, for changing the transmission ratio of the control impulses emitted by the control disk, in which the setting shaft of the resetting device is journaled in a lever arm that is pivotally mounted in the machine housing, and extends essentially parallel to a link disposed in the transmission train and engages the pivot point between the transmission train and the setting device, and where the axis of the setting shaft extends through one end point of the rocking range of this pivot point produced by the control disk.

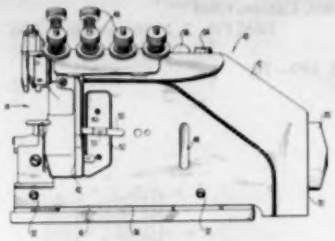
3,638,594

SEWING MACHINE COOLING SYSTEM

George B. Armstead, Jr., Glastonbury, and Edward A. Kelly, Wethersfield, both of Conn., assignors to The Merrow Machine Company, Hartford, Conn.

Filed Mar. 10, 1970, Ser. No. 18,062
Int. Cl. D05b *71/00*; **F24b** *3/00*
U.S. Cl. 112—218 R **9 Claims**

A cooling system for an industrial sewing machine of the overseaming type, including a hollow, shell-like shroud positioned over and closely surrounding the sewing machine housing, and a fan mounted on the machine's main drive shaft adjacent an opening in the shroud to force air through the shroud over the outer surface of the machine and out through open spaces along the bottom of the shroud and at the end of the machine opposite the fan. The shroud being



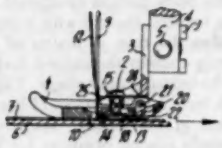
spaced from the surface of the machine is cool to the touch and assists in muffling the sound of the machine.

3,638,595

MULTIPURPOSE PRESSER FOOT

Ramon Casas-Robert, Geneva, Switzerland, assignor to Mefina S.A., Fribourg, Switzerland

Filed Sept. 3, 1970, Ser. No. 69,387
Claims priority, application Switzerland, Sept. 9, 1969, 14151/69
Int. Cl. D05b *29/00*
U.S. Cl. 112—235 **4 Claims**



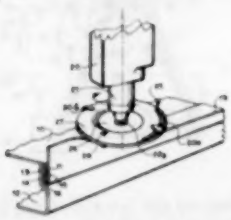
A multipurpose presser foot for sewing machines comprises a sole pivotally mounted to a flange-plate for attaching the foot to a presser bar with an alignment so that, in operation, a part of the lower surface of the sole is adjacent to completed stitching. So as to facilitate passage thereunder of raised stitching, this part is retractable from the lower plane of the sole against the action of a spring. The retractable part is connected to the rest of the sole in the manner of a deformable parallelogram by means of a set of articulated members so that the retractable part, when displaced, remains parallel to the said plane.

3,638,596

DEVICE FOR FORMING SHEET METAL JOINTS AND SEAMS

Joe H. Kemp, 204 West Dallas Road, Grapevine, Tex.

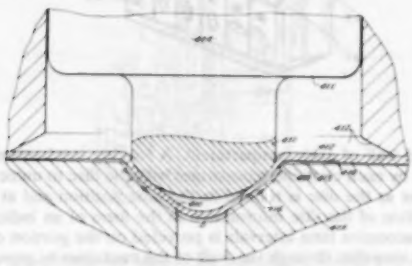
Filed June 8, 1970, Ser. No. 44,320
Int. Cl. B21d *31/06*
U.S. Cl. 113—54 **10 Claims**



A rotary hammer device for working sheet metal, particularly for closing sheet metal joints of the type commonly known as "Pittsburgh Lock," wherein the hammer is reversi-

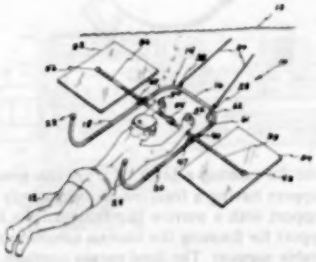
ble and is operable from both sides, so as to be movable in either longitudinal direction along the seam or joint.

3,638,597
METHOD OF FORMING A RIVET
Omar L. Brown, Dayton, Ohio, assignor to Ermal C. Fraze, Dayton, Ohio
Continuation-in-part of application Ser. No. 617,128, Feb. 20, 1967, and a continuation-in-part of 704,766, Feb. 12, 1968. This application Sept. 26, 1969, Ser. No. 866,064
Int. Cl. B21d *51/00, 51/26*
U.S. Cl. 113—116 FF **72 Claims**



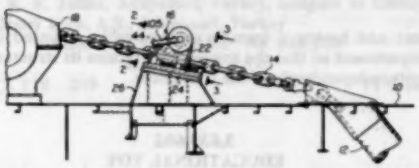
A hollow rivet is formed in sheet metal by first forming a dimple or hollow boss and then converting the dimple into the hollow rivet. Attenuation of sheet metal to form the dimple is carried out by initially stretching metal and subsequently squeezing the sloping wall of the dimple to extrude the sheet metal in opposite directions. The squeezing step to complete the attenuation makes it possible to keep the stretching of the metal within acceptable limits by a wide margin.

3,638,598
WATER VEHICLE
John J. Vlad, 30232 Tecla Drive, Warren, Mich.
Filed Jan. 7, 1970, Ser. No. 1,251
Int. Cl. B63g *8/00*
U.S. Cl. 114—16 A **15 Claims**



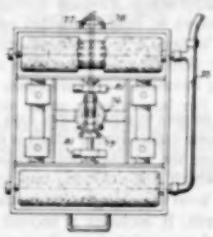
A water vehicle on which a rider may be towed by a boat or the like either on or beneath the surface of the water. The water vehicle comprises a substantially U-shaped frame member having the arm members of a pair of plane or planar members rotatably mounted to each leg thereof and including a pair of handles carried by each arm member to permit the rider of the water vehicle to independently rotate the planes relative to one another and to the frame member to thereby control the motion of the water vehicle while it is being towed by the boat. The ends of each leg of the U-shaped frame member are curved outwardly therefrom and are adapted to cooperate with the arm handles to permit the water vehicle to be mounted to the sides of a boat or the like whereby the water vehicle functions as a ladder to permit entry into the boat.

3,638,599
ADJUSTABLE CHAIN STOPPER
Harold E. Nilsen, 1425 Homestead Ave., Metairie, La.
Filed July 25, 1969, Ser. No. 844,886
Int. Cl. B63b *21/18*
U.S. Cl. 114—200 **11 Claims**



An improved chain stopper that will eliminate the need for using a devil's claw, pelican hook, or other device for properly holding a vessel's anchor in stowed position or for measuring tension in a vessel's anchor chain when it is riding at anchor. A pawl on the chain stopper is carried by a frame which is adjustable to bring the pawl into position immediately adjacent to one of the chain links to hold the chain.

3,638,600
APPARATUS FOR TREATING FERROUS SURFACES
Henry J. Modrey, 158 Eagle Drive, Stamford, Conn.
Filed Aug. 21, 1969, Ser. No. 851,920
Int. Cl. B63b *59/00*
U.S. Cl. 114—222 **9 Claims**

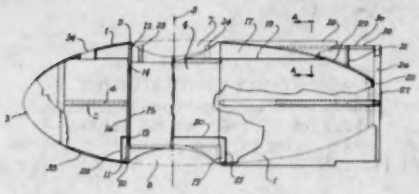


This disclosure teaches a device for treating a ferrous surface and contemplates such applications as painting or scrubbing a ship's hull. Preferably, one or more rollers are engaged to the ferrous surface by magnets which are connected to the rollers within the width thereof by means of spring members. Thus engaged, the rollers are easily moved over the surface. Suitable paint applying devices or scrubbing brushes with drives are furnished on the rollers.

3,638,601
ACOUSTICALLY TRANSPARENT HYDRODYNAMIC TOWED BODY FOR UNDERWATER EXPLORATION AND THE LIKE
Neville E. Hale, Port Credit, Ontario, and Kenneth Gardner, Mimico, Ontario, both of Canada, assignors to Fathom Oceanology Limited, Port Credit, Ontario, Canada
Filed Aug. 11, 1969, Ser. No. 848,877
Claims priority, application Great Britain, Sept. 3, 1968, 41,756/68
Int. Cl. B63b *21/00*
U.S. Cl. 114—235 B **7 Claims**

A submersible towable body for underwater acoustic purposes comprising an acoustically transparent shell which is

supported by an internal body structure in the form of an acoustically transparent compartment for receiving a transducer and having a transducer removably mounted in the compartment so that the towed body retains its structural integrity independently of the transducer.



3,638,602

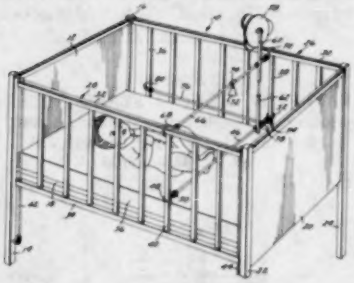
EDUCATIONAL TOY

Fernando Carreno, 10225 Traylor Way, Garden Grove, Calif.

Filed Apr. 14, 1969, Ser. No. 815,964

Int. Cl. G01d *21/00*

U.S. Cl. 116—114 **8 Claims**



This invention relates to educational toys for attachment to infants' cribs. In one embodiment which is explained in detail in the specification, the toy includes a resilient line terminating in hooks by which it is extended taut across the crib in a position and at a level for engagement by the feet of an infant occupying the crib. It includes a second elastic line connected at one end to a point along the length of the first and having a hook at its other end by which it can be connected to the side of the crib and there held taut in a position and at a level for engagement by an arm of an infant occupying the crib. The toy also includes a bell and brightly colored discs and connected to and carried by the elastic lines so that the bell is rung and the discs are moved when the elastic lines are moved as an incident to engagement by the infant's limbs.

Another embodiment includes a frame connected to the crib so that it extends upright above the crib wall. An arm of the frame extends over the crib and carries a mobile which is actuated by a cord interconnecting the mobile with an elastic cord which is stretched across the crib in position for engagement by one of the infant's limbs.

3,638,603

CONTAINER FOR STORING AND DISPENSING MEDICATION

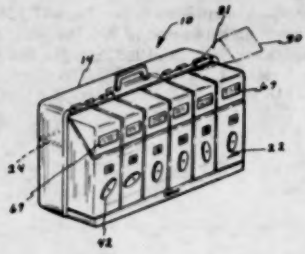
McClellan B. Conover, 1209 Kensington Ave., Flint, Mich.

Filed Mar. 9, 1970, Ser. No. 17,388

Int. Cl. G09f *9/00*

U.S. Cl. 116—121 **16 Claims**

A container for storing and dispensing medication having means for recording and indicating the number of times such medication is dispensed during a selected period of time, comprising a plurality of compartments arranged in a side-by-side fashion, each compartment having a hinged locked cover to permit individual access to interior A disc is rotatably mounted on an interior wall of each compartment and has a portion viewable through an opening in the forward wall of each compartment. A locking mechanism carried by each container cooperates with the disc to unlock the cover as the disc is rotated to the next position and at each position of the disc information in the form of an indication of successive time intervals is provided on the portion of the disc viewable through the wall of the container to provide a record as to the dispensing of the medication.



3,638,604

APPARATUS FOR COATING STRIP-FORM SUBSTRATES

Peter Herzhoff, Leverkusen; Hans Gref, Cologne-Stammheim; Rolf Behr, Leverkusen; Fritz Maus, Cologne-Flittard; Wolfgang Schweicher; Willi Wasser, both of Leverkusen; Josef Friedsam, Langenfeld, and Kurt Browatzki, Opladen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 10, 1969, Ser. No. 797,809

Int. Cl. B05c *5/02*

U.S. Cl. 118—50 **2 Claims**

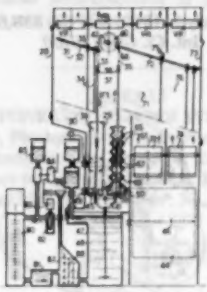
A machine for coating a layer of a viscous emulsion on a movable support having a feed means operatively associated with the support with a narrow gap between the feed means and the support for forming the viscous emulsion into a layer on the movable support. The feed means contains a chamber opening into the narrow gap, and the machine is arranged so that the viscous emulsion fed from the chamber and formed by the narrow gap is under an adjustable static differential in pressure between the inlet end of the narrow gap which has a lower pressure on the emulsion and the outlet end of the gap which has a higher pressure. A cavity in a wall-adjoining the chamber in the feed means has one opening into the chamber sidewall and containing a compressible gas acts as an air cushion and reduces the variations in pressure on the feed material during feeding as the gas is enclosable within the cavity by the passage of feed material through the chamber.

3,638,605

FABRICATION OF PRINTED CIRCUITS

Pierre J. Grandgirard, Livry-Gargan, France, assignor to Societe Industrielle Bull-General Electric (Societe Anonyme), Paris, France

Filed June 3, 1970, Ser. No. 42,943
Claims priority, application France, June 5, 1968, 6918464
Int. Cl. B05c *11/00*
U.S. Cl. 118—50.1 6 Claims



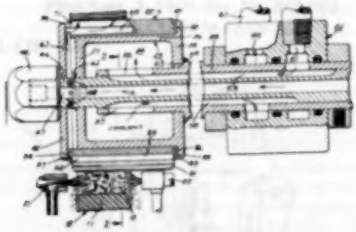
An assemblage for lacquering metallized boards provided with metallized holes therethrough, wherein, in a dustproof enclosure each board is first dehydrated by heating, lowered vertically into a tank of lacquer, moved through the lacquer in a direction perpendicular to the plane of the board, raised vertically from the tank, and passed through a drying chamber. Said drying chamber includes a lacquer setting chamber having a hot air feed therein and surmounted thereon a drying passageway including radiant and convection-type heaters.

3,638,606

APPARATUS FOR CONTROLLING THE COATING OF SELECTED SURFACES OF AN ARTICLE OF MANUFACTURE

Louis W. Pieper, and Robert O. Kerr, both of Fort Wayne, Ind., assignors to General Electric Company

Original application Mar. 4, 1968, Ser. No. 710,103. Divided and this application Nov. 21, 1969, Ser. No. 878,624
Int. Cl. B05b *15/04*
U.S. Cl. 118—69 2 Claims



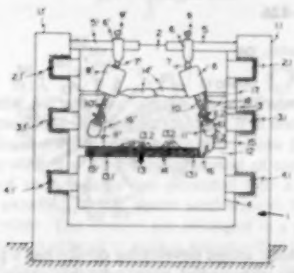
Apparatus for masking selected surfaces of an article of manufacture, for instance restricted entrances and beyond of stator cores, while other selected surfaces are being coated with coating material. A member having extensions formed with enlarged free ends disposed beyond the restricted entrances in spaced relationship therewith is detachably mounted in heat exchange relation on a cooling jacket sealed at a number of locations. During the coating of the other selected surfaces, fluid is supplied in the spaces between the member and the selected article surfaces to prevent material buildup on the article. Coolant is circulated through the jacket to maintain temperature of certain regions of the member and jacket below the melting temperature of the coating material. In this way, the selected surfaces of the article are efficiently and effectively masked while at the same time certain components, such as the member having the extensions, may be rapidly disassembled and reassembled without disturbing the sealed nature of the jacket.

3,638,607

RUBBER COATING APPARATUS WITH EXCESS RUBBER RECOVERY MECHANISM

Heinz K. E. Jaffke, Adapazari, Turkey, assignor to Uniroyal Endustri Turk, A.S., Adapazari, Turkey

Filed Aug. 8, 1969, Ser. No. 848,508
Int. Cl. B05c *1/08*
U.S. Cl. 118—249 11 Claims



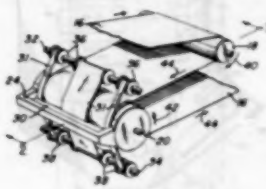
In rubber-coating apparatus including calender rollers which define a coating gap therebetween for applying rubber to a fabric web, and in which excess rubber accumulates outside the lateral edges of the web, a new type of excess rubber recovery apparatus includes a pair of excess rubber control bodies, each having the shape of a solid of revolution. Each of these bodies is suspended by a flexible rotary drive shaft from a drive unit connected by a universal joint to a carriage which is adjustable along a horizontal rail. The mechanism rotates the control bodies in a manner to displace the excess rubber toward the central region of the fabric and permit it to be conveyed back to the coating gap by one of the calender rollers.

3,638,608

TRAILING BLADE STRIPING APPARATUS

Henry Gabbard, Xenia, Ohio, assignor to The Standard Register Company

Filed Apr. 10, 1969, Ser. No. 815,115
Int. Cl. B05c *3/02*, *1/16*
U.S. Cl. 118—406 12 Claims



Coating apparatus of the trailing blade type which includes means for providing a coating to a surface of a continuous web, in which the coating consists of one or more stripes thereof. Each stripe may be relatively wide or relatively nar-

row. The coating material may be of the hot melt type, in which the coating material is solid at normal room temperature and is a liquid only at temperatures considerably above room temperature. The coating material may be of the solvent type or of the water emulsion type, or which is a liquid at normal room temperatures and in which a drying process removes a vehicle from the material and a solid coating remains. A thin flexible shield which engages selected portions of the web is disposed between the trailing blade and the web to prevent coating of the web in the portion thereof which is engaged by the shield.

3,638,609

ELECTROSTATIC IMAGE DEVELOPING DEVICE

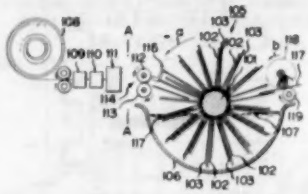
Sadanao Ando, and Funihiro Miyagawa, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Dec. 3, 1968, Ser. No. 780,673

Claims priority, application Japan, Dec. 4, 1967, 42/77802; 42/77803; Dec. 13, 1967, 42/79948; 42/79949; 42/79950; 42/79951

Int. Cl. B05c *11/14*

U.S. Cl. 118—426 **3 Claims**



An electrostatic image developing device has a photosensitive copy paper transporting body rotatable about a horizontal axis and having a plurality of photosensitive copy paper receiving plates equiangularly disposed and extending radially peripherally of the body. Copy papers bearing electrostatic images are held in position between adjacent receiving plates by hinged holding plates which press them against the receiving plates. Rotation of the transporting body sweeps them through a developing tank.

3,638,610

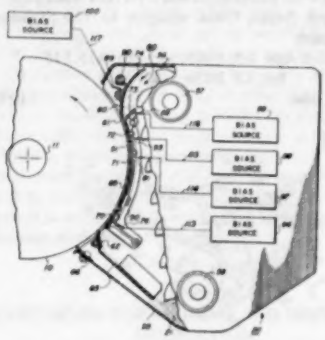
DEVELOPMENT APPARATUS

James M. Lyles, Fairport; Robert E. Hewitt, Penfield; Glenn L. Hilt, and James E. Britt, both of Webster, all of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed July 3, 1969, Ser. No. 838,778

Int. Cl. G03g *13/00*

U.S. Cl. 118—636 **14 Claims**



Apparatus for developing a latent electrostatic image on an image support member in which a series of electrically isolated electrodes are supported in close parallel relation with the member to form a continuous, enclosed, development zone. A continuous flow of two-component developer material is passed through the development zone and the electrodes biased so that the distribution of material in the flow stream is controlled to first develop and then clean the photoconductive plate surface.

3,638,611

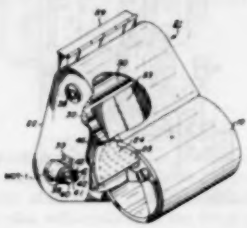
ELECTRODED DEVELOPMENT DEVICE

Ernest A. Weiler, Rochester, and Frederick W. Hudson, West Henrietta, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed July 3, 1969, Ser. No. 838,818

Int. Cl. G03g *13/00*

U.S. Cl. 118—637 **4 Claims**



A development system is herein disclosed for making visible a latent electrostatic image supported on an image retaining member. The apparatus includes an elongated biased electrode positioned in close parallel relation to the image-retaining member to form an enclosed development zone in which a flow of two component developer material is maintained. A series of pins are mounted on the electrode and extend into the development zone to disperse the developer material while the material is under the influence of an electroded force field wherein the concentration of toner in the flow stream is controlled.

3,638,612

APPARATUS FOR MARKING CONDUCTOR CABLES

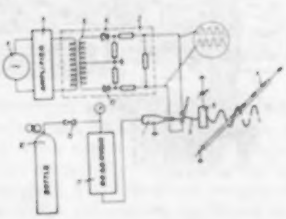
Hans Joachim Haise, Ditzingen, and Hans Harbort, Ludwigsburg, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 15, 1970, Ser. No. 28,903

Claims priority, application Germany, Apr. 24, 1969, P 19 20 966.6

Int. Cl. B05b *5/00*

U.S. Cl. 118—625 **9 Claims**



A longitudinally advancing conductor cable freshly extruded with plastic insulation is marked by a stream of a fluid material of a predetermined color as follows: The stream is first ejected from a high-pressure nozzle, sinusoidally deflected by electrical deflection means, and then the deflection is amplified to be substantially larger than the cross-sectional dimension of the cable by an electrical amplifying means before the stream is applied transversely to the cable.

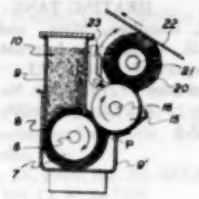
Where a complete band mark needs to be made around the cable, a second stream may be applied to the cable opposite to the side being marked by the first stream, by deflecting and amplifying the second stream in the same manner as the first stream. Using a displacement electrode and varying the DC potential applied thereto, the band marks made by each stream may be matched more precisely by bending the second stream toward the advancing direction of the cable and by controlling the degree of bending to match the first stream as the two streams hit the cable. A plurality of streams of different or the same color materials may be applied to the cable simultaneously at given intervals after being deflected and amplified in the same manner as the first stream.

3,638,613

TONER DEVELOPER SYSTEM

Uldis Klavsons, Pittsford; William D. Perun, Webster; Denzel D. Stoops, Rochester, and David M. Terry, Webster, all of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Mar. 10, 1969, Ser. No. 805,766
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **7 Claims**



A developer apparatus wherein a transfer or donor roller triboelectrically attracts to its surface toner contained in a sump or reservoir. The toner in the sump is prevented from agglomerating by an agitator device. A fur brush picks up toner from the transfer or donor roller and deposits it upon a charged surface whereby the image thereon is rendered visible.

3,638,614

ELECTROSTATIC LATENT IMAGE DEVELOPMENT APPARATUS

Eugene F. Young, Henrietta, and Ryland F. Rogers, Webster, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Sept. 3, 1969, Ser. No. 855,002
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **12 Claims**

Apparatus for effecting development of an electrostatic latent image comprising a plurality of magnetic developing rollers positioned with intersecting magnetic force fields for effecting a blanket of developing material extending about and between the developing rollers adjacent an electrostatic latent image-bearing surface. A cylindrical roller, which may be electrically biased, is positioned between the magnetic developing rollers adjacent the electrostatic latent image bearing surface to enhance image development.

3,638,615

METHOD OF GROWING OYSTERS

William W. Budge, Hillsborough, and Malcolm Donald, Woodside, both of Calif., assignors to Pacific Mariculture, Inc., Pescadero, Calif.

Filed June 1, 1970, Ser. No. 42,253
Int. Cl. A01k *61/00*
U.S. Cl. 119—4 **8 Claims**

Apparatus for growing oysters in sea water comprising a member mounted in sea water so that it is above the bottom level of the sea water at all times and below the top surface of the sea water for a substantial period of each 24 hours. A plurality of seed oysters are provided and a cement other than that excreted by the oyster seed secures the oyster seed to the member. The oysters are arranged in a predetermined pattern and are spaced in such a manner that the oysters can grow to a substantially larger size on the member without deforming each other.

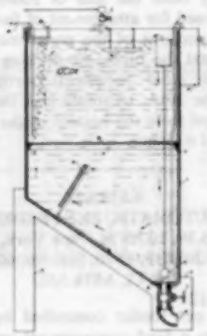
In the method, a member is positioned in the sea water so that it is disposed above the bottom level of the sea water and for a substantial period of time of each 24 hours, below the top surface of the sea water. Seed oysters are secured to the member using an adhesive and the oysters are arranged in a predetermined pattern and are spaced in such a manner so that they can grow to a substantially larger size without deforming each other.

3,638,616

FISH-GROWING AQUARIUM

William Jeter Carmouche, 353 Stanford Ave., Baton Rouge, La.

Filed Sept. 14, 1970, Ser. No. 71,762
Int. Cl. A01k *63/00*
U.S. Cl. 119—5 **1 Claim**



An aquarium with fresh water supply above for growing large quantities of fish in a minimum of space. A screen

across aquarium confines fish to upper levels and prevents them from mixing descending waste particles below with fresher water above. Slanted bottom of aquarium converges to an adjustable outlet through which sediments are forced by the weight of water above. An air pump releases bubbles at end of tubing near screen to aerate water and create circulation causing contaminants to fall by gravitational and centrifugal forces. A ball valve with float closes outlet when water level falls too low. A siphon and auxiliary tank prevents overflow. Fresh water entering presses water with contaminants away from fish through screen below and out of discharge opening, removing pollutants and replacing water at required intervals to permit the crowded fish to grow for years. A filter retards the return of the heavier particles of pollutants and nitrogenous substances to the space occupied by the fish. A small propeller aerator strengthens the circulation.

3,638,617

DEER AND WILD TURKEY FEEDER

Matthew G. White, P.O. Box 1601, Uvalde, Tex.

Filed Aug. 13, 1970, Ser. No. 63,577

Int. Cl. A01k *5/00*

U.S. Cl. 119—51 **11 Claims**

A granular feed hopper for animals including a lower downwardly opening gravity outlet. A generally horizontal panel member is disposed in vertical registry with the outlet only slightly spaced below the latter such that the angle of repose of granular feed being gravity discharged through the outlet will fall within the plan area of the panel member. However, the spacing of the panel member below the outlet is appreciably greater than the largest dimension of individual feed particles to be dispensed from the hopper and the panel member is mounted for rotation about an upstanding axis, whereby the feed being discharged from the outlet and resting upon the panel will be disturbed and moved from beneath the pile of feed resting upon the panel member as the latter is rotated. In addition, the panel member includes peripherally spaced portions which are disposed appreciably radially outwardly from the axis of rotation of the panel member and exposed for attachment of feed thereto. These outer peripheral portions of the panel member attract the birds to be fed and the birds, by pecking at the feed supported from these outer peripheral portions of the panel member, cause the latter to rotate and thus feed from the hopper to be pulled from the bottom of the pile of feed resting upon the panel member.

3,638,618

AUTOMATIC PET FEEDER

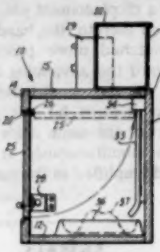
John Strother, 175 W. 137th St., New York, N.Y.

Filed July 31, 1970, Ser. No. 60,074

Int. Cl. A01k *5/02*

U.S. Cl. 119—51.12 **1 Claim**

An automatic pet feeder controlled by a timer which releases a door to a feed compartment and simultaneously rings a bell to signal the pet that the door has been opened. A second door is released by the same timer at a later time for a second feeding also with a simultaneous ringing of the bell. A supply of water is released by the same timer simultaneously with the opening of one of the doors with the water



supply being fed into one of the feeder dishes to moisten dry pet food at the time of its being made available to the pet.

3,638,619

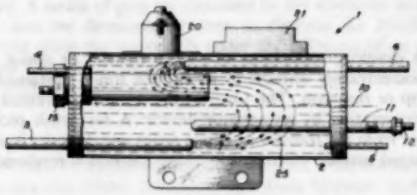
THERMOSTATICALLY CONTROLLED LIQUID-HEATING TANK

Henry B. Hall, Hamilton, Mass., and Norman W. Hill, Rochester, N.H., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed June 17, 1970, Ser. No. 47,054

Int. Cl. F22b *5/00*

U.S. Cl. 122—13 A **6 Claims**



An apparatus for heating a liquid for use in medical, dental and other services comprising a receptacle for heating the liquid, thermostatic means for determining the temperature of the liquid as it exits from the receptacle, inlet and outlet means for said receptacle, said inlet and outlet means extending into the interior of the receptacle for some distance. The thermostatic control means are located adjacent the outlet means, and the heater means for the liquid are disposed adjacent the inlet means.

3,638,620

STEAM OR HOT-WATER BOILER

Nils Axel Ambjorn Ostbo, Goteborg, Sweden, assignor to Gotaverkens Angtekniska AB (Gotaverken Heat Engineering Co. Ltd.), Goteborg, Sweden

Filed Apr. 6, 1970, Ser. No. 25,623

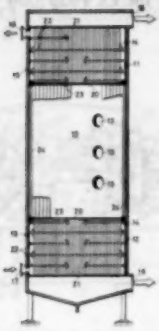
Claims priority, application Sweden, Apr. 23, 1969, 5756/69

Int. Cl. F22b *9/04*

U.S. Cl. 122—115 **2 Claims**

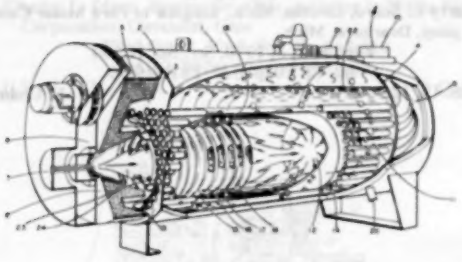
In a steam or hot-water boiler of the type, which consists of a radiant heat combustion chamber and at least one convection part connected directly thereto, the end plate of the convection part turned towards to the combustion chamber will be intensely heated. In order to ensure that this plate is efficiently cooled one baffle plate within the water space of the convection part is more closely placed with respect to the end plate than the ordinary spacing between the baffle plates.

in such a manner that an increased velocity of the waterflow is obtained, which means a higher rate of heat transfer and



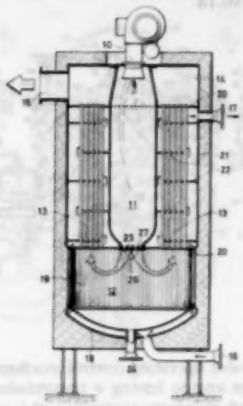
also a safe removal of possible steam bubbles from the inside of the end plate.

3,638,621
COMBINATION FIRE AND WATER TUBE BOILER
Glenn D. Craig, Menomonee Falls, Wis., assignor to Aqua-Chem, Inc., Waukesha, Wis.
Filed Aug. 26, 1969, Ser. No. 853,023
Int. Cl. F22b *7/06*
U.S. Cl. 122—140 R **17 Claims**



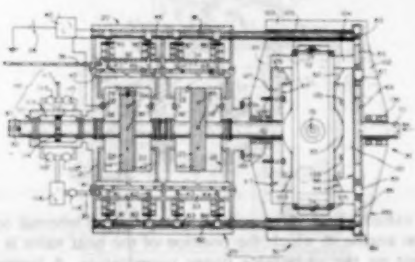
A natural circulation, shockproof, horizontal furnace, combination water tube and fire tube boiler. The water tubes comprise a plurality of membrane-connected, ring-shaped tubes, defining a substantial portion of the primary combustion cylinder for the burner flame, surrounded by a larger diameter, secondary combustion cylinder which defines the remaining portion of the longitudinal combustion zone, and which redirects the combustion gases in a return path back over the outer surface of the water tube-membrane structure. The secondary combustion cylinder is connected only at one end and is free to expand and contract due to temperature changes without stressing the boiler or the combustion cylinder. The combustion gases then reverse direction a second time in a reversal chamber to pass through horizontal fire tubes extending the length of the boiler directly through the large outer shell containing the water to be heated, and then out through the flue gas outlet. This novel boiler unit can be used to generate steam, or for hot water applications with minor modifications.

3,638,622
RETURN FLOW BOILER
Nils Axel Ambjorn Ostbo, Goteborg, Sweden, assignor to Gotaverkens Angtekniska AB (Gotaverken Heat Engineering Co. Ltd.), Goteborg, Sweden
Filed Apr. 6, 1970, Ser. No. 25,622
Claims priority, application Sweden, Apr. 23, 1969, 5757/69
Int. Cl. F22b *7/12*
U.S. Cl. 122—182 R **1 Claim**



In return flow boilers the gases flowing along the wall of the flue tube will be cooled, whereby the combustion in the marginal portions of the flame will be considerably less complete than in the core thereof, which will have undesirable consequences when the flame emerges into the return chamber. In order to bring about a complete combustion also of the marginal portions of the flame the outlet of the flue tube is considerably restricted as compared to the main part of the tube, whereby the portions of the flame having flown along the wall of the flue tube will be forced into the core of the flame, when this emerges into the return chamber.

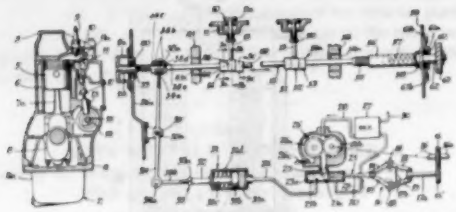
3,638,623
SPINNING PISTON ENGINES AND SYSTEM AND PROCESS OF OPERATION
James A. Weinheimer, P.O. Box 1365, Panhandle, Tex.
Filed Mar. 23, 1970, Ser. No. 21,665
Int. Cl. F02b *53/00*; **F16h** *1/30*; **F04b** *17/00*
U.S. Cl. 123—45 **10 Claims**



The piston shaft of an internal combustion engine, which shaft moves in a straight line path powered by combustion gasses within a cylinder, connects to a gear train assembly

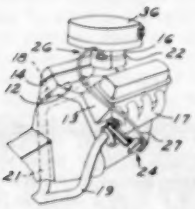
rotatably attached to the cylinder and continuously rotates the piston about its straight line path during its motion in such path and provides for reversible direction and variable speed of the engine output shaft.

3,638,624
ENGINE VALVE CONTROL MEANS
Donald J. O'Grady, 7634 W. Clarence Ave., Chicago, Ill.
Filed Apr. 13, 1970, Ser. No. 27,658
Int. Cl. F01l *7/34, 1/08*
U.S. Cl. 123—90.18 **12 Claims**



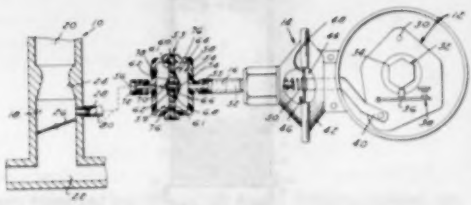
An engine valve operating control mechanism for an internal combustion engine having a transmission output driven gear pump and governor controlling the output of the oil pressure from the pump in direct proportion to the engine load whereby a hydraulic cylinder and piston unit operated by the pump pivots a cam-shifting lever which shifts the camshaft to move one of three different contoured cam lobe means in contact with the engine valves for opening and closing the intake and exhaust valves at one of three operating conditions for low, medium or high engine speed operation under load conditions.

3,638,625
EXHAUST MANIFOLD HEAT VALVE CONTROL SYSTEM
Angelo Jaimee, Union Lake, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed June 23, 1969, Ser. No. 835,369
Int. Cl. F02m *31/00*
U.S. Cl. 123—122 H **2 Claims**



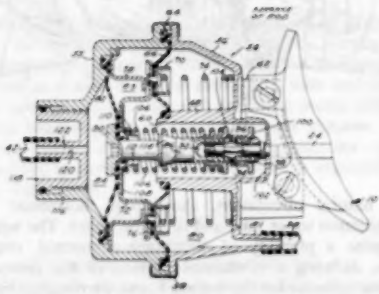
An exhaust heat valve control system for an internal combustion engine in which the position of the heat valve is dependent on the carburetor flange temperature. A temperature responsive bimetal valve opens and closes a vent to a vacuum chamber in response to the carburetor flange temperature. A vacuum motor connected to the vacuum chamber displaces the exhaust heat valve in response to variations in the vacuum chamber pressures.

3,638,626
ENGINE SPARK TIMING CONTROL DEVICE
John R. Marshall, Taylor, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed July 6, 1970, Ser. No. 52,326
Int. Cl. F02p *5/06*
U.S. Cl. 123—117 A **5 Claims**



An internal-combustion engine has a vacuum servo connected to the distributor breaker plate for moving it as a function of the change in carburetor spark port vacuum as controlled by a mechanical device between the servo and spark port having sintered metal flow restriction and a one-way check valve in parallel flow circuits, the check valve unseating during rapid vehicle accelerations to quickly reduce the spark advance setting to a lower level, for better performance, the sintered metal flow restriction providing a delayed rate of return to an advanced spark timing setting during relatively slower accelerations, to minimize the emission of undesirable exhaust gas elements.

3,638,627
VARIABLE ADVANCE ENGINE IGNITION TIMING CONTROL
Garry E. Beard, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Mar. 3, 1970, Ser. No. 16,164
Int. Cl. F02p *5/10;* **F01b** *19/00*
U.S. Cl. 123—117.1 **12 Claims**

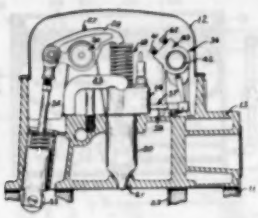


A dual diaphragm servo has one diaphragm operatively connected to the engine distributor advance plate and operatively interconnected with the other, the two diaphragms being operatively controlled in their movements by vacuum from induction passage ports at opposite sides of the carburetor throttle valve, the vacuum to the diaphragms being selectively controlled as functions of changes in vehicle speed and for engine or ambient operating temperatures, to modulate the timing advance in a variable manner with changes in vacuum level.

3,638,628
FUEL CONTROL ASSEMBLY FOR INTERNAL COMBUSTION ENGINES HAVING FUEL INJECTORS

Henry Stanford Stolworthy, Box 1508, Chelan, Wash.

Filed Sept. 18, 1970, Ser. No. 73,297
Int. Cl. F02m 39/00; F02b 77/08
U.S. Cl. 123—139 R 6 Claims

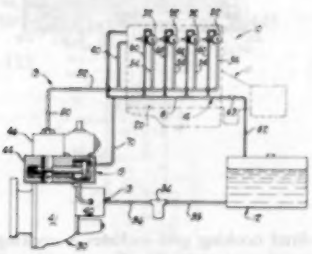


A fuel control assembly is described for injector fed internal combustion engines having a common injector control tube connected to a plurality of injector racks to normally move the racks in unison. Control rack levers are mounted on the control tube and extend radially therefrom to connect with the racks. A safety feature is provided to enable the control tube to move the remaining racks to an idle position when one of the racks become frozen to prevent the engine from overspeeding. The safety feature is incorporated in the control rack levers to release the connection between the tube and the frozen rack and enable the tube to control the remaining racks.

3,638,629
FUEL INJECTION SYSTEM

Charles L. Moon, Brecksville, Ohio, assignor to White Motor Corporation, Cleveland, Ohio

Filed Oct. 2, 1969, Ser. No. 863,310
Int. Cl. F02m 39/00; F02d 1/04
U.S. Cl. 123—139.6 9 Claims



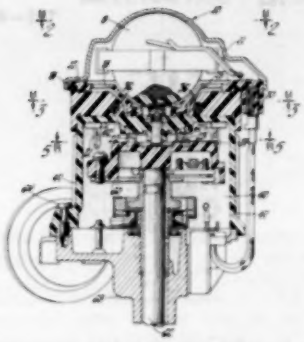
A fuel injection system for an internal combustion engine is disclosed. The system includes a fuel supply tank, a fuel supply system between the tank and the engine, a fuel return system for returning fuel to the tank from the engine and a fuel flow governor controlling fuel flow in the supply system in response to fuel pressure in the return system.

The supply system includes a fuel injection pump which normally supplies quantities of fuel to fuel injectors in excess of the fuel injected into the engine. The flow governor includes a fuel control valve for modulating the flow of fuel to the injectors in response to the level of fuel pressure in the fuel return system to prevent oversupply of fuel to the engine.

3,638,630
INTERNAL COMBUSTION ENGINE IGNITION DISTRIBUTOR CAP AND COIL ASSEMBLY

Lewis R. Hetzler; Robert E. Campbell; Charles R. Carlson, and Gerald O. Huntzinger, all of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed May 20, 1970, Ser. No. 38,988
Int. Cl. F02p 7/00
U.S. Cl. 123—148 D 2 Claims

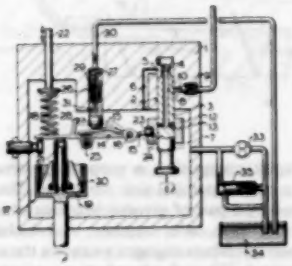


An internal combustion engine ignition distributor cap and coil assembly. An intermediate member of insulating material supports a plurality of elongated electrical terminals arranged in a circular pattern, one for each cylinder of the engine, and an equal number of elongated conductors, each of which is connected to one end of a corresponding one of the elongated terminals and extends substantially normal to the axis of the circular pattern of terminals. An ignition coil housing member, within which the ignition coil windings are enclosed, is secured to a cap member with the intermediate member disposed therebetween and the free end of each terminal extending through a corresponding terminal accommodating opening through the closed end portion of the cap member to provide a three-section assembly.

3,638,631
RPM. REGULATOR FOR FUEL INJECTION PUMPS

Franz Eheim, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

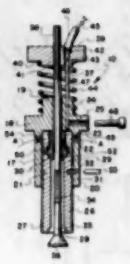
Filed Feb. 27, 1970, Ser. No. 15,085
Claims priority, application Germany, Mar. 8, 1969, P 19 11 913.2
Int. Cl. F02n 17/08, 39/00; F02d 1/04
U.S. Cl. 123—179 L 3 Claims



In an r.p.m. regulator, the cutoff of additional fuel quantities required for the starting of an internal combustion engine, is effected by an r.p.m.-dependent pressure which displaces a starting piston against the force of a starting spring.

In this manner, the starting spring, which, during starting r.p.m.s, causes the delivery of said additional fuel quantities, is neutralized and does not affect the fuel quantity control during normal engine operation.

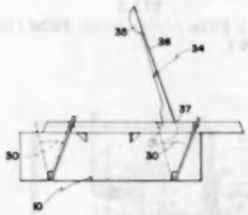
3,638,632
MOTORCYCLE COMPRESSION RELEASE
James Willard Boling, 2060 Almanor St., Oxnard, Calif.
Filed May 6, 1970, Ser. No. 35,058
Int. Cl. F01l *13/06, 13/08*
U.S. Cl. 123—182 **10 Claims**



A compression release structure for a motorcycle includes the customary exit valve communicating with the combustion cylinder interior and may be lifted from its seat by manual operation of a pull cable in order to expel combustion product and gases under compression from the cylinder. When the cylinder pressure is diminished to a point where ambient air would otherwise tend to enter the cylinder with its contaminants the air is prevented from entering and fouling the cylinder and lubricants by a spring-biased one-way check valve.

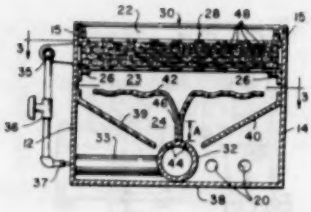
The one-way check valve is self-centering and of conical shape to swiftly establish a positive seal with its seat and block out the atmospheric air.

3,638,633
TOY CATAPULT
Alvena F. Clark, Saskatoon, Saskatchewan, Canada, assignor to Catapult Toy Co., Ltd., Saskatoon, Saskatchewan, Canada
Filed Feb. 27, 1970, Ser. No. 14,958
Int. Cl. F41b *3/02*
U.S. Cl. 124—4 **2 Claims**



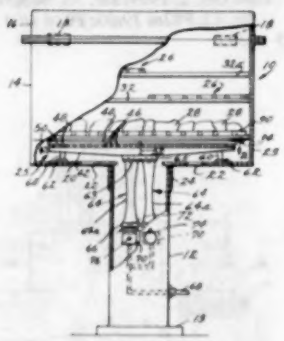
A toy catapult comprising a supporting structure upon which slides a pair of parallel side members. The side members are moved by a pair of pivoted brackets which are both interlocked with each side member. A crossbar attached between the side members engages a cam on the underside of a sling component. When the brackets are pivoted forward, the side members and crossbar are slid forward causing the crossbar to engage the cam near the pivot to the sling component which in turn causes the sling component to be flipped forward in a vertical arc.

3,638,634
BROILER
Walter J. Bolitho, 30005 West 13 Mile Road, Farmington, Mich.
Filed May 28, 1970, Ser. No. 41,492
Int. Cl. A47j *37/00;* **F24c** *3/04*
U.S. Cl. 126—41 R **7 Claims**



A gas-fired broiler having a compacted volume of trap rock interposed between a grill which supports the edibles and a primary source of heat which cooks the edibles. The trap rock provides both a substantially uniform temperature cooking surface and a noncombustible collector and absorber of liquid animal fats. A member capable of being heated to incandescence is positioned between the primary source of heat and the trap rock pack acting as a distributor of the heat from the burner to the whole area of the trap rock pack.

3,638,635
SPLIT GAS BURNER
Wendell M. Drennan, Evansville, Ind., assignor to Arkla Industries, Inc., Evansville, Ind.
Filed Sept. 18, 1969, Ser. No. 859,156
Int. Cl. A47j *37/07;* **F23d** *13/00*
U.S. Cl. 126—41 R **8 Claims**

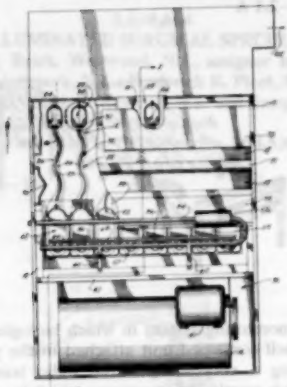


A gas-fired cooking grill includes a cooking and smoke-retaining enclosure and a gas burner within the enclosure, the burner being an integral cast hollow structure having two distinct, independently controlled burner portions serving different parts of the cooking rack.

3,638,636
AIR HEATER
William A. Marshall; Bernard Paul Lunkwicz, both of Centralia, and Henry Meresz, Wheeling, all of Ill., assignors to Lear Siegler, Inc., Santa Monica, Calif.
Filed Jan. 22, 1970, Ser. No. 4,881
Int. Cl. F24h *3/06*
U.S. Cl. 126—110 R **17 Claims**

A plurality of adjacent shell-type heat exchange shells are disposed in a furnace casing above a blower with an air

passage between adjacent heat exchange shells. Each heat exchange shell includes a lower combustion chamber which opens into an intermediate heat exchange section, and a flue gas collector duct above the heat exchange section connected to a vent. Gas burners are disposed in each combustion chamber to create products of combustion which flow upwardly through each heat exchange shell. The walls of each heat exchange section are convoluted to produce a serpentine passageway with considerable heat transfer surface



for the rising combustion gases. A baffle located at the inlet to the collector duct produces even gas flow through the heat exchange section and diverts gases to heat the walls of the duct. Each heat exchange shell is constructed of sheet metal and comprises a pair of complementary half-shells welded together such that an outer peripheral seam is formed. The seam follows the line of the convoluted walls of the heat exchange section to reduce thermal stresses. The heat exchange shells are mounted in the casing with the use of a floating joint to enable vertical expansion of the shells.

3,638,637

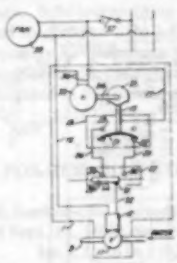
SPRAY HUMIDIFIER

William H. Coffman, Jr., Mt. Pleasant, Pa., assignor to Lewbill Industries Inc., Scottdale, Pa.

Filed May 21, 1970, Ser. No. 39,445

Int. Cl. F24f *3/14*

U.S. Cl. 126—113 **3 Claims**



A normally closed solenoid valve connects a source of water under pressure to the spray nozzle of a humidifier. An electric switch is connected with the solenoid for energizing it to open the valve. This switch is actuated between on and off positions by means of a normally inactive timer that includes means for holding the switch in each of its positions a predetermined length of time. The timer is provided with means for connecting it in the fan circuit of a forced warm air furnace so that the timer will operate whenever the fan is running.

3,638,638

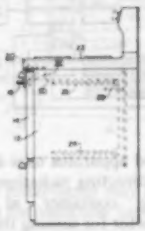
LATCHING AND LOCKING ARRANGEMENT FOR SELF-CLEANING OVEN DOOR

Clarence Gary Phifer, Columbia, S.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 26, 1970, Ser. No. 40,495

Int. Cl. F24c *15/02*

U.S. Cl. 126—197 **10 Claims**



A bimetal-operated locking arrangement for a latched door of a self-cleaning oven which includes a second bimetal means having negative deflection characteristics below a certain temperature cooperating with the main bimetal means to aid the movement of the locking means toward a locked position during a period of oven temperature rise, and to aid the movement of the locking means away from the locked position during the period of falling oven temperatures following a heat cleaning operation.

3,638,639

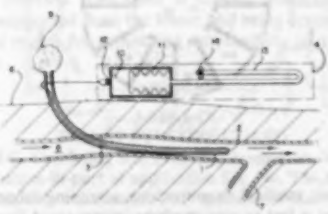
APPARATUS FOR REMOVING LIPIDS FROM THE HUMAN BLOODSTREAM

Edward W. Merrill, Cambridge, Mass.; assignor to Hans H. Estin; Leonard W. Cronkhite, Jr., and William W., trustees of The Charles Riber Foundation Wolbach

Filed Feb. 24, 1970, Ser. No. 13,279

Int. Cl. A61b *05/14*

U.S. Cl. 128—2 F **6 Claims**



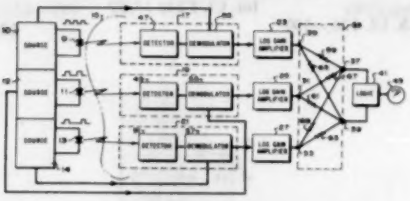
A catheter for monitoring the concentration of lipids in the bloodstream made from a material that selectively absorbs lipids. The catheter is inserted in the bloodstream while the interior wall of the catheter is washed continuously or periodically with a nontoxic solvent delivered through a lipid-impermeable fiber to dissolve the absorbed lipids. The lipid-rich solvent is contacted with an absorbent located at the open end of the catheter and outside the epidermis to evaporate the solvent. The absorbent is analyzed periodically for lipids.

3,638,640

OXIMETER AND METHOD FOR IN VIVO DETERMINATION OF OXYGEN SATURATION IN BLOOD USING THREE OR MORE DIFFERENT WAVELENGTHS

Robert F. Shaw, 2316 Leavenworth St., San Francisco, Calif.

Filed Nov. 1, 1967, Ser. No. 679,920
Int. Cl. A61b *5/00*
U.S. Cl. 128—2 R **36 Claims**



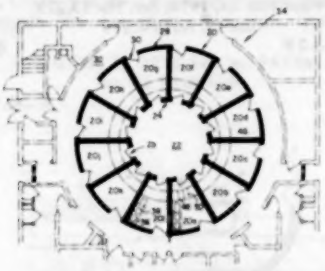
Oximeter method and apparatus uses a test appliance that includes a source for directing radiation into skin tissue or other blood-confining container at three or more wavelengths and a detector for sensing the radiation intensity emanating from the skin tissue or other container at each wavelength. The oximeter method and apparatus also uses circuitry for combining the detector outputs in a predetermined manner to provide an indication of the oxygen saturation of the blood independently of position or movement of the test appliance on the patient and without first calibrating the indication on each patient.

3,638,641

MULTIPHASIC MEDICAL EXAMINATIONS SCREENING LABORATORY CONSTRUCTION

John C. Abromavage, Tempe, and James F. George, Phoenix, both of Ariz., assignors to Arcoa, Incorporated, Phoenix, Ariz.

Filed Nov. 19, 1969, Ser. No. 878,094
Int. Cl. A61b *05/10*
U.S. Cl. 128—2 R **13 Claims**



Multiphasic medical examinations screening laboratory of a type where a test sequence phase is separated from a self-administered history phase, wherein a plurality of wedge-shaped test chambers surround a central core area and constitute the test sequence phase area, each test chamber containing all instruments and leads to perform predetermined tests, inexpensive instruments being located in each test chamber and expensive equipment being centrally located in the central core and interconnected with each test chamber via a cable, with still further expensive equipment mounted on a track above the wedge-shaped test chambers adapted for selective placement in each chamber, wherein the construction and arrangement of various features are such as to provide optimum facility use, convenience, privacy, safety and practice of medical examinations within the purview of the process.

3,638,642

PATIENT MONITORING SYSTEM WITH BEDSHEET-MOUNTED ANTENNA

Albert E. Heflin, Sr., El Cajon, Calif., assignor to Teledoc Corporation, El Cajon, Calif.

Filed Mar. 13, 1970, Ser. No. 19,439
Int. Cl. A61b *5/05*
U.S. Cl. 128—2.1 A **3 Claims**

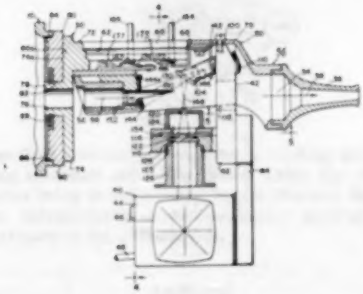
A patient monitoring system in which biological data are sensed by a self-contained unit attached to the patient, the unit containing a very low-powered radio transmitter. A radio receiver is coupled to an antenna which is incorporated in the bed covering in such a manner as to pickup signals from the transmitter regardless of the position of the patient on the bed, the antenna being flexible to avoid discomfort to the patient and to withstand motion of the patient. The metal bedframe acts as a shield against unwanted radio frequency signals. Suitable display and recording apparatus can be connected to the receiver at the bedside or at a remote location.

3,638,643

ENDOSCOPE FOR PHOTOGRAPHIC RECORDING

John E. Hotchkiss, Corte Madera, Calif., assignor to Hotchkiss Instruments, Inc.

Continuation-in-part of application Ser. No. 675,811, Oct. 17, 1967, now abandoned. This application Aug. 29, 1968, Ser. No. 756,112
Int. Cl. A61b *1/22, 1/04*
U.S. Cl. 128—9 **13 Claims**



An endoscope having a housing with a viewing aperture aligned with a sight aperture and a sight passage therebetween. A light source directs focusing and photographic flashlight rays onto a mirror mounted to the housing between the apertures for the coaxial reflection of such light rays along the axis of the sight passage and through the sight aperture. A mounting member connects a camera with the

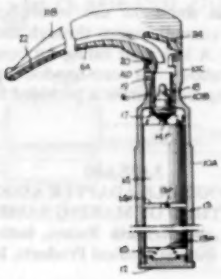
endoscope so that the optical axis of the camera is aligned with the sight passage whereby the exact area being photographed is coaxially illuminated by both focusing and photographic flashlight rays. Terminals electrically couple a light source mounted to the housing for illumination of a cavity to be photographed with an electric power source. The terminals furthermore mechanically secure the mounting member to the housing. A universally movable support structure mounts the camera and the endoscope and permits their alignment with the organ.

3,638,644

ILLUMINATED SURGICAL SPECULUM

Franklin G. Reick, Westwood, N.J., assignor to Michael Elbert, Mamaroneck, N.Y.; Frederick R. Picut, Mountainside; Franklin G. Reick, Westwood, N.J. and Joseph R. Wilder, New York, N.Y., part interest to each

Filed Mar. 5, 1969, Ser. No. 804,530
Int. Cl. A61b *1/06*
U.S. Cl. 128—16 **4 Claims**



An illuminated medical appliance for surgical and diagnostic purposes, the appliance including an applicator, such as a tongue depressor or retractor blade, formed of a strong, heat-resistant resin capable of withstanding the mechanical stresses to which the device is subjected when inserted. The inner surface of the applicator is contoured to engage tissue or whatever other organic material forms the wall of the cavity or region of insertion. Detachably mounted on the outer surface of the applicator and conforming to the curvature thereof, is a plastic, light-transmitting strip whose front end portion is adapted to disperse light laterally over a relatively broad zone adequately to illuminate the region of interest, the other end being optically coupled to a light source which is housed and energized in the handle of the appliance.

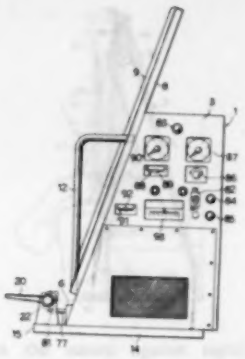
3,638,645

APPARATUS FOR REHABILITATIVE EXERCISE OF FEET

Isao Kitada, 7-10, Sanban-cho, Chiyoda-ku, Tokyo, Japan

Filed Sept. 16, 1970, Ser. No. 72,674
Int. Cl. A61b *1/02*
U.S. Cl. 128—25 B **9 Claims**

Apparatus for rehabilitative exercise of feet is comprised of a cabinet having a pair of motor-driven footboards which swing up and down on their common shaft in the alternatingly opposite directions, while a rehabilitant with his feet on these footboards reclines against a backboard secured to the cabinet. The motor adapted to drive the footboards has a speed control device thereby to controllably vary the speed of their swinging movements. Two additional mojors are provided inside the cabinet, one for the adjustment of the angle through which the backboards are permitted to swing and the other for the adjustment of the angle between the centerline of the angle of swing of the backboards and the plane of the horizon, so that the rehabilitant may have his feet exercised the way most suiting his particular case of disability.

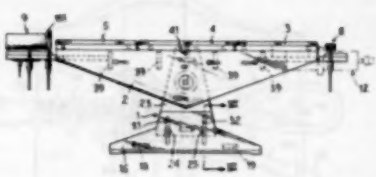


3,638,646

THERAPEUTIC TABLE

Marcel M. Draux, 57 rue de Rempart, 59 Valenciennes, France

Filed Sept. 12, 1969, Ser. No. 857,416
Claims priority, application France, Oct. 16, 1968, 170146
Int. Cl. A61h *1/00*
U.S. Cl. 128—33 **13 Claims**



A therapeutic table having a frame and at least three patient supporting platforms slidably mounted on the frame. The table is characterized by the frame being pivotable about a pedestal so that either end of the patient supporting portion may be elevated. The table is further characterized by a vibrator supported from the frame and being operatively connected to means for supporting an extremity of a patient on the table.

3,638,647

TOILET SYNCOPE GUARD

Raymond C. Creelman, 532 Fifth St., Bremerton, Wash.

Continuation-in-part of application Ser. No. 736,659, June 13, 1968, now abandoned. This application Mar. 2, 1970, Ser. No. 15,467
Int. Cl. A61f *5/37*
U.S. Cl. 128—133 **18 Claims**

A syncope guard is disclosed for use with a person sitting on a toilet, or chair, or some other form of seat above a floor. The guard comprises a stand that is adapted to be mounted adjacent the seat, and a harness which is attachable to the body of the person sitting on the seat, and interconnected with the stand so that when the person has a syncope reaction, his head and upper trunk can fall forward from the sitting position into a slumped downward condition above the floor, but once he is in the latter position, the harness arrests his fall and retains his head and upper trunk above the floor.

It also comprises an alarm device, and an actuator which is connectable to the body of the person and operative to sound

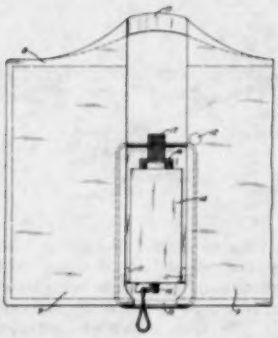
the alarm when the person's body slumps into the aforesaid downward position above the floor.

3,638,648

BREATHING BAGS

Layton A. Wise, Washington, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Feb. 19, 1970, Ser. No. 12,202
Int. Cl. A62b *7/00*
U.S. Cl. 128—202 6 Claims



A single strip of flexible and impervious material is folded lengthwise upon itself to form a double-thickness member, which is provided midway between its ends with a recess extending inwardly from one edge. The edges of the strip and substantially all of the area between the recess and the other edge of said member are sealed together so that two longitudinally spaced breathing bags are formed that are integrally connected at their inner ends by a band adapted to extend around the back of the neck to suspend the bags over the chest. Each bag has an opening therein near its outer or lower end.

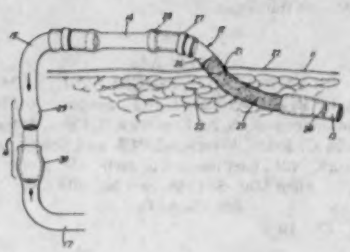
3,638,649

IMPLANTABLE PROSTHETIC PASS-THROUGH DEVICE

Robert A. Ersek, St. Louis Park, Minn., assignor to The Regents of the University of Minnesota, Minneapolis, Minn.

Filed July 7, 1969, Ser. No. 839,297
Int. Cl. A61m *05/00*, *25/00*
U.S. Cl. 128—214 R 11 Claims

An implantable through-the-skin prosthetic device for the permanent entry into the body for passage of liquid, conductors or the like. The device includes a roughened synthetic resinous member that courses through the skin and subcutaneous tissues and into the body. This special roughening promotes tissue ingrowth and thus effects a firm mechanical seal. Animal experimentation and clinical success imply that the seal is also dry and germproof. One form of such a device



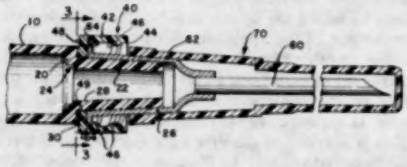
is an arteriovenous shunt for use in artificial dialysis. A roughened plastic cannula passes through the skin into the blood vessel itself. A ball joint fitting for connection to the external circuits allows for one-handed operation by a trained patient. A special reamer is provided for use with the shunt.

3,638,650

SYRINGE AND NEEDLE ADAPTER ASSEMBLY AND METHOD OF MAKING SAME

George K. Burke, and Kenneth Raines, both of Bethlehem, Pa., assignors to Burron Medical Products, Inc., Bethlehem, Pa.

Filed Apr. 29, 1970, Ser. No. 32,789
Int. Cl. A61m *5/00*
U.S. Cl. 128—221 7 Claims



A needle adapter is supported in surrounding relationship to the boss on a syringe and has attaching portions to mount a hypodermic needle having attaching flanges on the hub thereof. The needle adapter includes a plurality of tapered spaced portions which are ultrasonically fused to spaced portions of the annular shoulder on the barrel of the syringe surrounding a boss extending therefrom.

3,638,651

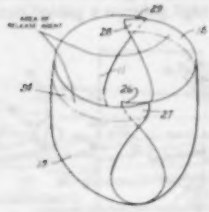
DIAPERS

David Torr, Oyster Bay, N.Y., assignor to Georgia-Pacific Corporation, Stamford, Conn.

Filed Oct. 8, 1969, Ser. No. 864,836
Int. Cl. A61f *13/16*
U.S. Cl. 128—284 15 Claims

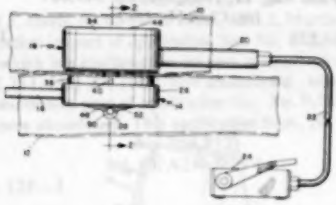
Disposable diapers, to be used without pins, which have a pressure-sensitive adhesive area at at least one corner at each

side of the diaper and have surface layers of release agent



which are in contact with the adhesive areas when the diapers are packed in a carton.

3,638,652
SURGICAL INSTRUMENT FOR INTRALUMINAL ANASTOMOSIS
James L. Kelley, 3111 Kellogg, San Diego, Calif.
Filed June 1, 1970, Ser. No. 42,075
Int. Cl. A61b *17/32, 17/11*
U.S. Cl. 128—305 **8 Claims**



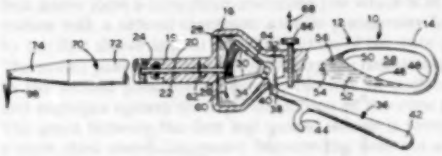
An instrument for use by surgeons particularly in cases involving resection and anastomosis of vascular and digestive tract organs. The instrument is dimensioned for insertion of the principal parts of the instrument into the open ends of or through stab wounds in the lumena after resection and the actual anastomosis is by stapling the tissue entirely around the stoma which is formed by an endless knife, illustrated as annular, and the tissue cut away to form the stoma is conveniently removed with instrument. The staples and knife are in a replaceable cartridge. Remote power means connected by a flexible conduit allows maximized ease of maneuverability of the principal parts of the instrument during actual surgical procedure.

3,638,653
SUTURING DEVICE
H. Lee Berry, 1414 Laburnum St., McLean, Va.
Filed July 31, 1969, Ser. No. 846,566
Int. Cl. A61b *17/06;* **A61l** *17/02;* **D05b** *1/00*
U.S. Cl. 128—340 **1 Claim**

A combination of elements for use in surgery, particularly suturing. The combination includes a conventional needle holder with a second element, namely a needle-suture assembly combining a suture storage chamber and a hollow needle through which the suture is drawn. The needle-suture assembly is associated with the needle holder in order that suturing is accomplished by manipulation of the handles of the needle holder. The needle-suture assembly is attached to the needle holder by grasping the needle with the needle holder and also by means associated with the suture storage chamber, which attaches the unit to the needle holder on the opposite side of the pivot point from the needle. The latter attaching means serves also to effectively lock the needle holder against inadvertent opening during the suturing operation. The suture storage chamber includes a storage spool which serves to seal the storage chamber, store the thread,

and to restrain the suture against rapid, undesirable dispensing.

3,638,654
SUTURING INSTRUMENT
Uche Akuba, 30 Park Ave., Suite 19F, New York, N.Y.
Filed July 11, 1969, Ser. No. 841,051
Int. Cl. A61b *17/04;* **D05b** *91/00;* **D05c** *15/00*
U.S. Cl. 128—340 **10 Claims**



A surgical suturing instrument for applying sutures to a wound or the like comprising a first handle movably mounting a second handle which is operable to rotate a shaft when moved from a first position to a second position. Needle means including a needle is affixed to the shaft so that movement of the second handle affects rotation of the needle. Provided in the needle is a suture-retaining slot which carries a suture so that as said needle is rotated through tissue it automatically threads the sutures.

3,638,655
INTUBATION TUBES
George O. Doherty, 2301 River Road, Missoula, Mont.
Continuation of application Ser. No. 628,593, Apr. 5, 1967, now abandoned. This application May 18, 1970, Ser. No. 37,462
Int. Cl. A61m *25/00*
U.S. Cl. 128—351 **13 Claims**

An intubation, endotracheal, or other tube having a tubular portion provided with a bulbous cuff encirclingly disposed on its distal end. The cuff is formed from an easily compressible or distortable material which constantly seeks to revert to its original shape, yet, when distorted, exerts pressure of

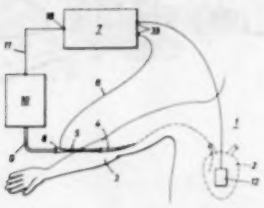
small magnitude on the distorting object. The cuff sealingwise engages the walls of a patient's encircling tracheal lining. The cuff of one embodiment is reduced in diameter at its center for accommodation of the patient's vocal cords.

3,638,656

METHOD AND APPARATUS FOR MONITORING AND STIMULATING THE ACTIVITY OF THE HEART

Theo Grandjean, Lausanne; Juan Ulrich Zumstein, Bolligen, and Alfred Liechti, Bern, all of Switzerland, assignors to Fred Liechti Aktiengesellschaft, Bern, Switzerland

Filed Aug. 14, 1969, Ser. No. 850,116
Claims priority, application Switzerland, Aug. 26, 1968, 12746/68
Int. Cl. A61n *1/34*
U.S. Cl. 128—419 P **9 Claims**



The intensity of the stimulation pulses from the output stage is increased step-by-step to an adjustable maximum value by a regulating stage. The latter is fed pulses derived from the activity of the heart. When these pulses are absent or late, the value of a shunt combination of resistances is increased in steps until an adjustable maximum value is reached, as determined by a potentiometer connected in parallel with these resistances and also connected to the control electrode of a component in the output stage.

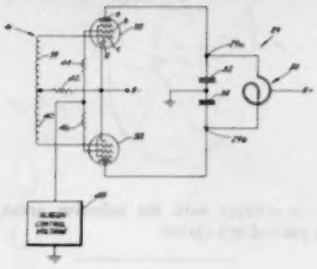
3,638,657

SHORT WAVE DIATHERMY CIRCUIT

Hal C. Mettler, 680 Westbridge Place, Pasadena, Calif.

Filed July 30, 1969, Ser. No. 846,012
Int. Cl. A61n *1/40*
U.S. Cl. 128—422 **11 Claims**

A diathermy having a vacuum tube in a tuned plate, tuned grid oscillator circuit. A coil is placed in the tuned plate circuit for applying short wave signals to a patient undergoing treatment. The tube has at least a control grid connected to the tuned grid circuit and a screen grid. A circuit is coupled to the screen grid for enabling a signal to be fed back from the plate circuit through the screen grid to the control grid and comprises an impedance for coupling the screen grid to a source of control signals for controlling the power delivered by the coil to a patient undergoing treatment.

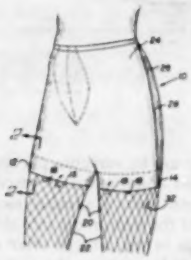


3,638,658

GIRDLE GRIPPING SURFACE

Marvin Becker, 276 Newtown Turnpike, Wilton, Conn., and Harold Belmuth, 8 Highwood Lane, Westport, Conn.

Filed Aug. 11, 1969, Ser. No. 849,007
Int. Cl. A41c *1/00*
U.S. Cl. 128—535 **1 Claim**



A girdle friction or gripping surface for stockings, panty hose or the like, the surface being applied directly to the leg portion surfaces bounding the garment leg openings rather than being applied to lace or other fabric which is sewn to the completed garment. The friction surface, in a preferred embodiment, consists of a dispersion of small mass or deposits of latex, elastomeric or plastic material which project through the stocking interstices and, in this manner, prevent the stockings from falling.

3,638,659

GRAIN LOSS MONITORING DEVICE

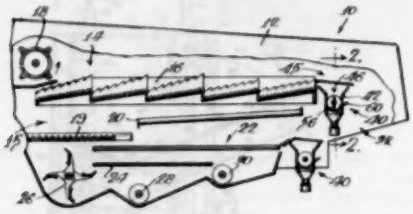
Robert L. Dahlquist, Rock Island, and Maurice Klee, Rockton, both of Ill., assignors to J. I. Case Company

Filed Apr. 3, 1970, Ser. No. 25,421
Int. Cl. A01f *12/44*
U.S. Cl. 130—27 W **12 Claims**

A monitoring device for indicating the loss of grain across the exit end of a crop separating mechanism supported within a crop receiving passageway. The monitoring device includes a conveyor extending across and below the exit end of the crop separating mechanism with the conveyor delivering any grain received therein to a flowmeter in communication therewith. The flowmeter is in the form of a vertical passageway with a platen disposed in the passageway and having a convex surface exposed to the path of flow of the grain. The platen is pivoted adjacent the side of the

passageway and has an end portion extending beyond the pivot to cooperate with signal-generating means for indicating flow of grain through the flowmeter.

In one embodiment, the signal generating means takes the form of a circuit having a warning light and a switch with the



switch actuated by the paddle in response to the flow of grain through the flowmeter. In another embodiment, the signal generating means is a circuit having an indicator and a variable resistor, the resistance of which is controlled by the paddle.

3,638,660

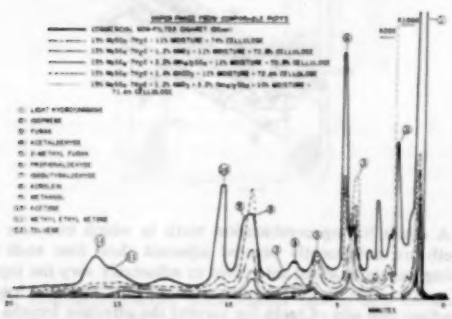
METHOD FOR MAKING A TOBACCO SUBSTITUTE COMPOSITION

Howard J. Davis, 8 Old Farm Road, RD. 2, Martinsville, N.J.

Continuation-in-part of application Ser. No. 473,916, July 21, 1965, which is a continuation-in-part of application Ser. No. 32,211, May 27, 1960, now abandoned , which is a continuation-in-part of application Ser. No. 9,763, Feb. 9, 1960, now abandoned. This application Sept. 10, 1968, Ser. No. 758,872

Int. Cl. A24b *03/14*

U.S. Cl. 131—2 **5 Claims**



A method of making a tobacco substitute material is disclosed which involves the use of fibrous woodpulp which contains at least 90 percent of alpha cellulose. The selected wood pulp of high alpha cellulose count is lightly beaten to a Canadian Standard Freeness of between 400–700 ml. and is then combined with a nontoxic combustion modifier and formed into a sheet having a density of 12–35 lbs./ft.^{3}. The combustion modifiers useable are the potassium, sodium and magnesium sulphates, magnesium and potassium chlorides, sodium, potassium, magnesium and ammonium carbonates and bicarbonates, potassium nitrate, ferric oxide, ferric hydroxide, alumina, magnesium gluconate, citrate, citrate and acetate and gluconic acid. The metallic compounds utilized are preferably used in their hydrated form.

3,638,661

METHOD OF FORMING FILTER CIGARETTES

Jesse R. Pinkham, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Nov. 13, 1969, Ser. No. 876,237

Int. Cl. A24c *05/48, 05/52, 05/58*

U.S. Cl. 131—94 **2 Claims**

A smoke filter is provided which is adapted to be combined with a tobacco rod to form a filter cigarette. The filter includes an elongated core piece of smoke impervious material, a first sleeve of thin perforated material encompassing said core piece, and a second sleeve of smoke impervious material encompassing said first sleeve and an end of the tobacco rod. The second sleeve has a portion thereof spaced from the first sleeve and cooperating therewith to form a first sleeve and cooperating therewith to form a first elongated annular passageway, one end of which communicates with the tobacco rod end. The perforations of the first sleeve form a core piece-encircling row which is in registration with a second elongated annular passageway formed by the first sleeve and an exterior portion of the core piece. The smoke passes at a high velocity from the first passageway to the second passageway through the row of perforations and impinges against the exterior portion of the core piece. The space between the first and second sleeves is formed by a short third sleeve interposed between the first and second sleeves. A method of forming the article is provided in which a multiple length filter is formed with said first sleeve being continuous and said third sleeve being applied as axially spaced portions around said first sleeve, after which the assemblage is severed into double length filter portions which are interposed between two cigarette portions and joined thereto by said second sleeve.

3,638,662

SMOKE FILTER

Jesse R. Pinkham, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

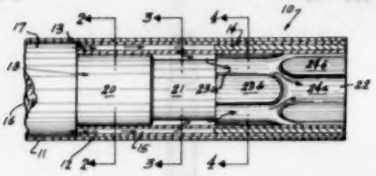
Filed Feb. 19, 1970, Ser. No. 12,745

Int. Cl. A24d *01/04;* **A24f** *07/04, 13/06*

U.S. Cl. 131—261 B **5 Claims**

A smoke filter is provided which is adapted to be affixed to one end of a tobacco rod. The filter includes an elongated core piece formed from smoke impervious material and having a cylindrical upstream end section, a cylindrical center section of lesser diameter than said end section, and a fluted downstream end section. The fluted section is provided with a first set of elongated flutes extending downstream from the center section and a second set of elongated flutes annularly offset from said first set and extending downstream therefrom. One set of flutes is of greater depth than the other and forms a trap for smoke particles. The core piece is encompassed by an inner sleeve provided with a plurality of

perforations arranged in encircling relation with respect to the center section. The inner sleeve cooperates with the center section to form a shallow annular first passageway. An outer sleeve encompasses the inner sleeve and is spaced therefrom to form an annular second passageway which communicates with the first passageway only through the perforations. The smoke flows through the perforations as high velocity jets which impinge against the exterior of the core piece center section. Subsequent to the jet impingement, the smoke flows downstream past the fluted end section.

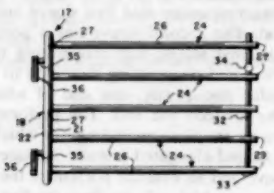


3,638,663

ADJUSTABLE HAIR FOUNDATION

Deloris J. Harbison, 2500 Independence Ave., Kansas City, Mo.

Filed June 16, 1970, Ser. No. 46,777
Int. Cl. A41g *5/00*
U.S. Cl. 132—54 **8 Claims**



A hair foundation or lift for application to a lady's head, having spaced-apart slats which extend upwardly from the scalp, and over which the hair, located between the slats, is drawn for bouffanting or puffing the hair. The foundation includes a base member or bar to which the slats are detachably and adjustably connected, enabling the slats to be disposed in vertical planes or inclined in a direction corresponding to the direction that the hair is drawn over the slats. The base member may include detachable sections, each capable of supporting a slat for increasing the length of the foundation and the number of slats utilized. A rod detachably engages through the ends of the slats, disposed remote from the base member, for confining the hair between said rod and the base member. Clips carried by the base member are clamped to the hair for securing the foundation in a desired location on the head.

3,638,664

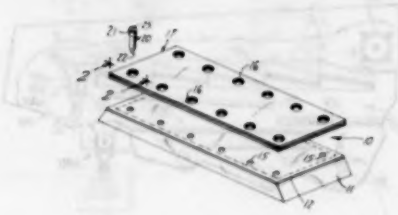
COMBINATION DISPLAY, STORAGE AND DISPENSING MEANS

Jerry Cohn, 1546 Broadway, New York, N.Y.

Filed Nov. 19, 1970, Ser. No. 91,101
Int. Cl. A45d *40/00*
U.S. Cl. 139—79 C **7 Claims**

The present invention relates to a combination display, storing and dispensing instrumentality, in particular for use in connection with coloring matters, cosmetic, and semisolid and similar plastic masses and applies more specifically to lipstick testing and like makeup equipment, which is generally exposed to view and generally tested when employed in specialty stores on counters thereof and other establishments.

Such equipment is of simplified construction and affords after use by successive persons that through separation of the top surface layer of superposed, preferably absorbent sheet material stapled or adhesively maintained in pad formation, the aesthetic outer appearance and ready function of the equipment will be at all times kept in a clean, antiseptic and tidy array.

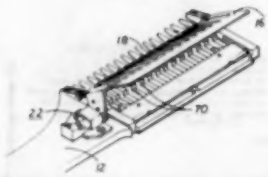


3,638,665

HAIR COMB WITH ADJUSTABLY TAPERED TEETH

Broussard Staffas, Sr., 2100 St. Bernard Ave., New Orleans, La.

Filed Mar. 25, 1971, Ser. No. 127,975
Int. Cl. A45d *24/36*
U.S. Cl. 132—129 **7 Claims**



A comb having combination teeth in which two sets of teeth are congruently pivoted adjacent their free ends to swing angularly about said pivot to adjustably vary the taper of said combination teeth, and a bar slidably mounted intermediate said sets of teeth for varying the effective lengths of said teeth directly with said adjustable taper.

3,638,666

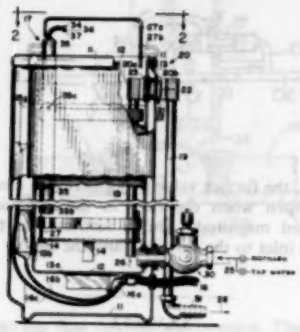
APPARATUS FOR ULTRASONIC PIPET WASHING

Sherman S. Fishman, 1961 Stockton St., San Francisco, Calif.

Filed Oct. 24, 1965, Ser. No. 504,777. The portion of the term of the patent subsequent to Aug. 1, 1988, has been disclaimed.
Int. Cl. B08b *7/02, 3/10*
U.S. Cl. 134—57 R **6 Claims**

An ultrasonic pipet washer for very complete decontamination of laboratory glass pipets, functioning to give an ultrasonic wash and more importantly an ultrasonic rinse; standard acoustic intensities are obtained with transducers on the bottom of the tank and high intensity is obtained by putting additional transducers on the sidewall. Transducers on the sidewall must be inactive when the solution level lowers past it during emptying and this is done with a liquid

level switch. Emptying is through a siphon whose inside arm extends to about 1 inch above the bottom which assures that



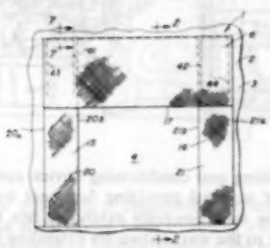
depth of solution remaining in the tank allowing the bottom transducers to remain active.

3,638,667

LOADING DOCK SHELTERS

Cyril P. Frommelt, and Sylvan J. Frommelt, both of Dubuque, Iowa, assignors to Dubuque Awning & Tent Company, Dubuque, Iowa

Filed May 5, 1970, Ser. No. 34,793
Int. Cl. E04f *13/00*
U.S. Cl. 135—5 A **7 Claims**



An extensible loading dock shelter having side curtains which are pulled into draping engagement with the sides of a truck retracting the shelter.

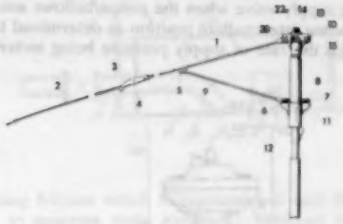
3,638,668

FOLDING UMBRELLA

Nobutoshi Kida, Osaka, Japan, assignor to Wakabayashi & Co., Ltd., Tokyo, Japan, a part interest

Filed May 5, 1969, Ser. No. 821,630
Claims priority, application Japan, Sept. 19, 1968, 43/81727
Int. Cl. A45b *11/00, 19/04, 19/10*
U.S. Cl. 135—20 R **1 Claim**

A folding umbrella which comprises a contractile pole on the top end of which an upper rib holder of an elongate form is fixedly mounted, a plurality of main ribs having an end rib each and pivotally held at their ends by said upper rib holder on its both sides in the manner of twofold division, a lower rib holder having an elongate form and slidably secured to said pole piercing therethrough and support ribs supporting said main ribs and pivotally held at their ends by said lower rib holder on its both sides in the manner of twofold division,



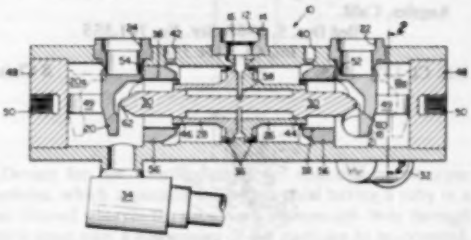
thereby enabling the folding umbrella to be folded in a flat and compact form.

3,638,669

CANTILEVERED BREAKAWAY FUEL AND OXIDIZER RELEASE

Robert A. Feight, Canoga Park; De Lacy F. Ferris, Van Nuys, and Frank B. Hunter, Woodland Hills, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed May 22, 1970, Ser. No. 39,839
Int. Cl. F02c *7/26;* **F16k** *17/40*
U.S. Cl. 137—68 **7 Claims**



A normally closed propellant isolation valve utilized in a missile propulsion system is actuated by propellant tank pressure to rupture a diaphragm and allow pressurized gas to flow into a cavity between two opposed pistons which are joined by a frangible tie. When the cavity pressure reaches a predetermined level, the tie fractures and allows the pistons to separate. Each piston then strikes and breaks an adjacent cantilever cup to simultaneously open oxidizer and fuel orifices. Each piston also moves its cup out of the flow path, thereby eliminating the effect of any pressure drop variation on the system mixture ratio.

3,638,670

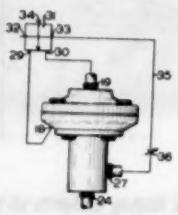
LOW TO HIGH FLUID PRESSURE INTERFACE APPARATUS

Clifford W. Allen, Lexington, Ky., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Mar. 25, 1970, Ser. No. 22,562
Int. Cl. F15c *1/14, 3/04*
U.S. Cl. 137—81.5 **4 Claims**

A piloted low to high pressure analog interface valve device is provided having a gain factor determined by the area relationship of a diaphragm piston subject to a differential control force and a bellows connected to the piston and subject to delivery pressure acting in a direction opposite to the control force. A two-way, metering-type supply valve controlled by movement of the piston/bellows assembly is

adapted to control the supply of fluid pressure to delivery. A bleed port continuously vents delivery chamber pressure which is established at a value determined by the valve gain factor and which is maintained against the bleed by metering action of the supply valve when the piston/bellows assembly stabilizes at some intermediate position as determined by the point at which the rate of supply pressure being metered to



the delivery is able to precisely match the rate of bleed. The interface valve is also adapted to be driven by the differential outputs of a pure fluid proportional amplifier to further increase the overall gain of the interface. Valve performance may be improved at the expense of gain through a feedback signal corresponding to delivery pressure connected to oppose the control signal at the fluid amplifier.

3,638,671

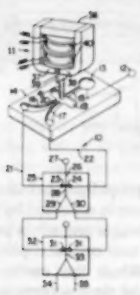
ELECTROFLUIDIC TRANSDUCER

Wirt T. Harvey, Phoenix, and John W. Merritt, Scottsdale, both of Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Dec. 5, 1968, Ser. No. 781,555

Int. Cl. F15c *3/00*

U.S. Cl. 137—81.5 **8 Claims**



This transducer includes the usual fluid beam-forming nozzle and output ports from which variable fluid streams are designed to issue. The proportion of fluid output is determined by an electromagnetically actuated deflector disposed between the nozzle and output ports for movement in response to electrical signals. The deflector has a rounded fluid beam deflecting surface movable relative to the path of the fluid beam.

3,638,672

VALVES

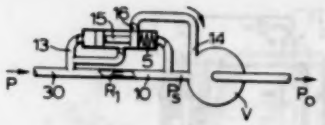
Charles Philip Smith, Woverhampton, and Stanley George Glaze, Brierley Hill, both of England, assignors to H. M. Hobson Limited, London, England

Filed July 24, 1970, Ser. No. 58,069

Int. Cl. F15c *1/16, 3/02*

U.S. Cl. 137—81.5 **4 Claims**

Mechanism for providing constant or near constant flow of fluid in a conduit which comprises a fluidic vortex valve having its supply inlet and its outlet connected respectively to upstream and downstream sections of the conduit, a further valve sensitive to flow conditions in the conduit and controlling a flow line from the conduit to the control inlet of the



vortex valve, the further valve being normally closed and arranged to open when the flow in the conduit attains a predetermined magnitude, and a restrictor in the conduit between the inlet to the flow line and the supply inlet to the vortex valve.

3,638,673

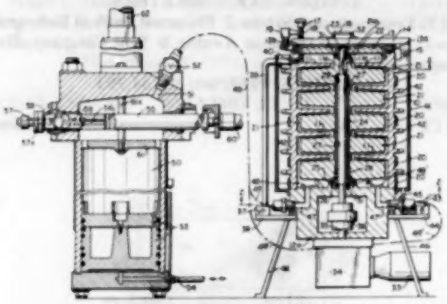
WAX-CONDITIONING APPARATUS

Virgil V. Stanciu, Rocky River, Ohio, assignor to Lampcraft Tool & Mold, Inc., Cleveland, Ohio

Filed Dec. 23, 1969, Ser. No. 887,589

Int. Cl. B29f *1/08*

U.S. Cl. 137—205 **1 Claim**



A wax-melting and conditioning device comprises an air-tight tank of material providing fast heat transfer, heating means for the tank, inwardly extending fins to increase the heat transfer to the wax, outwardly extending fins, if necessary, to cool the wax quickly to suitable injection temperature, means for agitating the wax in the tank and a vacuum pump for deaerating the wax during the melting and curing period. The tank is also equipped with at least one heated flexible hose for direct connection to a hot wax reservoir of a wax-injection machine equipped to transfer the wax from the melting tank to the injection machine reservoir free of air by moving a piston in the reservoir in a manner to suck wax over from the tank.

3,638,674

GASTIGHT DAMPER HAVING AN INFLATABLE SEAL

Donald L. Forst, Barberton, and Edwin B. Schrengauer, Wadsworth, both of Ohio, assignors to The Babcock & Wilcox Company, New York, N.Y.

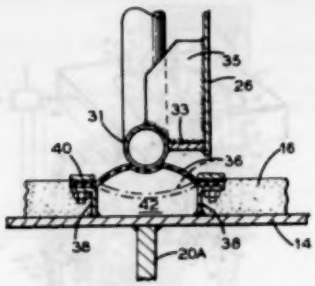
Filed Mar. 12, 1970, Ser. No. 18,987

Int. Cl. F16k *3/02*

U.S. Cl. 137—375 **4 Claims**

A structural member defining an opening. Pivotally mounted within the opening is a damper blade, the blade being movable between open and closed; means for so moving are also provided. An inflatable sealing member having a sealing surface for contact with the edge of the damper blade and responsive to changes in pressure within the sealing

member is attached in sealing relationship to an internal surface of the structural member and is positioned in a plane



transverse to gas flow through the opening. There is further provided a means for inflating and deflating the sealing member.

3,638,675

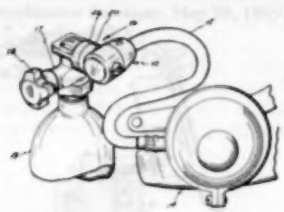
PNEUMATIC CLAMP

Denzel J. Dockery, G-4142 Fenton Road, Flint, Mich.

Continuation-in-part of application Ser. No. 710,856, Mar. 4, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 673,662, Oct. 9, 1971, now Patent No. 3,434,994. This application July 29, 1970, Ser. No. 59,119

Int. Cl. F16l *33/16*; B63c *11/00*

U.S. Cl. 137—550 13 Claims



A fitting for providing a connection between a tank of compressed gas and a diving mask including a body provided with an arm arranged to loosely embrace the outlet valve of the tank of compressed air. A piston is slidably mounted with respect to the bore and includes an inlet disposed to register with the outlet valve of the compressed air tank and an outlet adapted for connection to the diving mask. A filter is disposed within the inlet. A spring urges the piston and the body toward a position in which the arm clamps about the outlet valve of the compressed air tank and the inlet of the piston receives air from the outlet valve. A passage bypassing the filter and connected with the inlet directs air to an area of the piston to aid the spring in producing a tight engagement between the inlet provided in the piston and the outlet valve.

3,638,676

INLET DISTRIBUTOR FOR STORAGE TANKS

Charles O. Burch, 645 S. Walnut Ave., Arlington Heights, Ill., and David H. May, 1336 Central Ave., Wilmette, Ill.

Filed Nov. 3, 1969, Ser. No. 873,551

Int. Cl. B65d *25/04*; B67d *5/04*

U.S. Cl. 137—576 8 Claims

A small distributor tank with perforated top is provided for installation on the floor of a larger storage tank, whereby petroleum products to be stored can be introduced through an inlet line to the distributor tank without agitating sediment on the bottom of the storage tank, and with a minimum of

splashing friction which in conventional tank-filling devices tends to generate static electricity. Optional flow-directing baffles may also be included within the distributor tank.

3,638,677

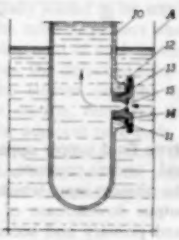
DEVICE FOR USE WITH APPARATUS FOR THE COUNTING OF PARTICLES IN SUSPENSION

Soemia Baccarini, Via Costantino Mias 89, Rome, Italy

Filed Dec. 17, 1969, Ser. No. 885,845

Int. Cl. G01n *27/02*, *27/06*

U.S. Cl. 137—576 5 Claims



Device for use with apparatus for counting microscopic particles, which apparatus includes a phial having a ruby in a wall thereof wherein the ruby has a microscopic hole through which must pass a suspension of the particles to be counted, which device comprises an apertured plug removably seated in the wall of the phial, and wherein the ruby is itself removably mounted in the aperture of the plug, whereby the ruby is easily removed for replacement or for unblocking of the hole.

3,638,678

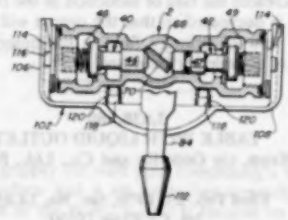
DUPLEX VALVE

Paul C. Symmons, Newton, Mass., assignor to Symmons Industries, Incorporated, Braintree, Mass.

Filed May 6, 1970, Ser. No. 35,053

Int. Cl. F16k *11/10*

U.S. Cl. 137—595 6 Claims



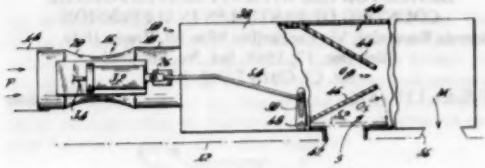
A hot and cold water supply valve for a washing machine adapted by operation of a single control lever to (a) prevent

flow of both hot and cold water to the machine, (b) pass only cold water, or (c) pass both hot and cold water.

3,638,679
INDUCTION SYSTEM HAVING VARIABLE PRIMARY VOLUME AND VARIABLE INDUCTION

Dimiter Gorchev, c/o Mitco Corporation, 440 Somerville Ave., Somerville, Mass.

Filed Nov. 20, 1969, Ser. No. 878,433
Int. Cl. F16k *19/00*
U.S. Cl. 137—604 **3 Claims**



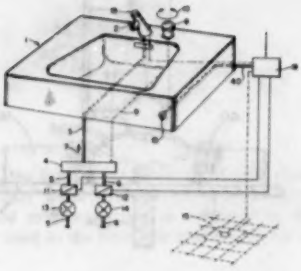
An induction-type fluid supply apparatus having an input for primary fluid under pressure, an induction means downstream of the primary input which introduces secondary fluid, and an output downstream of the induction means which emits mixed primary and secondary fluids. Between the primary fluid input and the induction means there is an adjustable valve of the type which, for each adjustment position, will pass fluid at a rate that is constant over a corresponding range of differential pressures. This valve is to be governed by a control device to indicate the rate at which the primary fluid is to be supplied, and means responding to the control device to adjust the valve to different positions. The induction means has a primary orifice through which the primary fluid flows and, adjacent to and downstream of the primary orifice, a secondary orifice through which the secondary fluid flows. Means for oppositely varying the areas of the primary and secondary orifices are provided to change the rate of flow of the induced secondary fluid. In one embodiment the primary and secondary orifices have their areas controlled by adjustable valves interlinked to simultaneously and oppositely change the areas. Flow of primary fluid through the adjustable valve, and flow of secondary fluid into the induction means, are interrelated by means interconnecting the adjustable valve and the means for varying the areas of the primary and secondary orifices. The interconnection, by means of mechanical linkages or reference to a common control, increases the rate of induction as the flow rate of primary fluid is decreased so that the output will be maximum. When the flow of primary fluid is maximum, induction is minimum, or completely closed off.

3,638,680
TABLE WITH LIQUID OUTLET

Hans W. Kopp, c/o Oederlin and Co., Ltd., Baden, Switzerland

Filed Feb. 25, 1970, Ser. No. 14,057
Int. Cl. F16k *19/00*
U.S. Cl. 137—606 **15 Claims**

The present invention relates to a washing table with a liquid or water outlet apparatus having a supply line with an electrically operated valve, such as a solenoid valve, controlled by a relay having a control circuit. The circuit includes a pressure-sensitive switch means operated through a

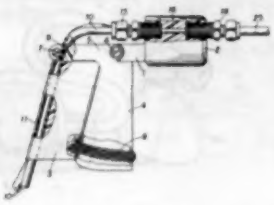


fluid-containing control tube line, a pressure-applying trigger means and a diaphragm to permit facile control of the valve.

3,638,681
REGULATOR CONTROLLING VOLUME OF ONE OR MORE STREAMS OF FLUID

Paul A. Moore, and Homer T. Boyles, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed May 27, 1970, Ser. No. 40,835
Int. Cl. F16k *7/04, 19/00*
U.S. Cl. 137—607 **9 Claims**



This invention relates to regulators, and more particularly to noncorrosive and nonclogging regulators which can control the volume of one or more separate streams of fluid passing therethrough.

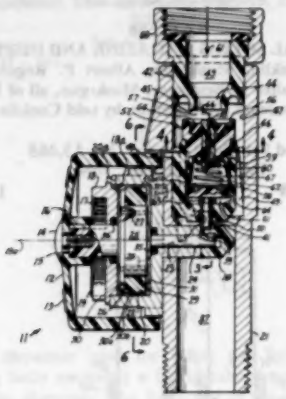
3,638,682
TIMER VALVE

William T. Heyer, 225 Mohawk Road, and Dale F. Soukup, 318 Mohawk Road, both of Santa Barbara, Calif.

Filed Apr. 6, 1970, Ser. No. 25,763
Int. Cl. F16k *21/06*
U.S. Cl. 137—624.12 **17 Claims**

A timer for actuating a device for a preselected period of time, and a timer valve incorporating said timer. The timer includes a windable driving spring engaged to a shaft. The shaft carries an actuator element such as a cam for actuating a device such as a valve. Turning the shaft in one direction winds the spring, and the wound spring will drive the shaft in the other direction. A clock-ring is rotatable in a reservoir that contains a silicone fluid. The silicone fluid fills a peripheral spacing between an outer wall on the clock-ring and an inner wall of the reservoir. The walls are concentric surfaces of revolution. A clutch couples the shaft and the clock-ring for mutual revolving motion, but enables them to be disengaged in at least one direction of rotation in order

that the shaft may turn in that direction without the clock-ring. A preferred timer valve incorporated in this timer has



its valve workings disposed in the flow passage of a conduit with a cam means of the timer also disposed therein.

3,638,683

HYDRAULIC DIRECTIONAL CONTROL VALVES

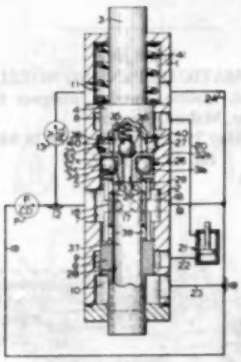
Horst Krieter, Stollenweg, Germany, assignor to Westinghouse Bremsen- und Apparate-bau G.m.b.H., Hannover, Germany

Filed Mar. 30, 1970, Ser. No. 23,787

Claims priority, application Germany, May 29, 1969, P 19 27 465.8

Int. Cl. F16k *11/07*

U.S. Cl. 137—624.27 **8 Claims**



This invention relates to a manually operable spool-type fluid pressure control valve that has a releasable locking mechanism to maintain the spool valve in certain of its positions until subjected to an axial force in excess of a chosen value. This locking mechanism comprises a plurality of balls and a pair of cam surfaces along which the balls roll when the spool valve is manually moved from one position to another. A fluid pressure force effective on one of the cam surfaces biases it against the balls to maintain them in either of two positions until the spool valve is subject to an external force in excess of the chosen value.

3,638,684

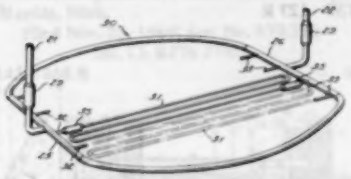
METHOD OF REPAIRING TUBE STRUCTURES

Stanley J. Pavilon, Shaker Heights, Ohio, assignor to Arthur G. McKee & Company, Cleveland, Ohio

Filed Mar. 16, 1970, Ser. No. 19,611

Int. Cl. F16l *55/18*

U.S. Cl. 138—97 **5 Claims**



A method for repairing tubes that, during use, develop on the tube surfaces contaminating layers that prevent joining of new tube sections, as in fluid circulating heat transfer installations for chemical reactors. At least two surrounding protective sleeves are initially joined as by welding, to a tube at spaced locations on the tube to protect underlying portions of the tube from development of such layers. If a defect occurs between the sleeves, the defective tube may be removed by cutting through the sleeves and the tube underneath, removing the cut tube section, removing the remaining cut sleeve portions from the adjacent tube ends, and then joining a replacement tube section to the portions of the unremoved tube that were protected by the sleeves, preferably with new sleeves fixed in place over the resulting joints.

3,638,685

WEFT YARN INSERTING GRIPPER

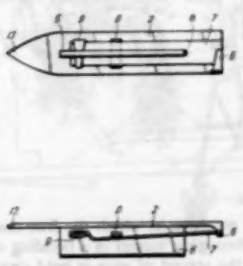
Vladimir Svaty, Liberec, Czechoslovakia, assignor to Elitex-Zavody Textilniho strojirenstvi generalni reditelstvi, Liberec, Czechoslovakia

Filed Apr. 23, 1970, Ser. No. 31,123

Claims priority, application Czechoslovakia, Apr. 30, 1969, 3053

Int. Cl. D03j *5/06*

U.S. Cl. 139—125 **5 Claims**



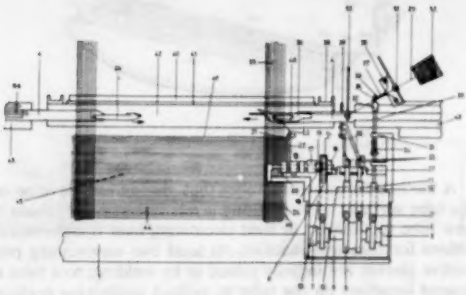
An inserting gripper for weft yarn comprising a body having a sliding surface and a rib extending normally thereto along the length of the body. A spur is located on the body and the body is provided with a flat spring arranged to cooperate with the spur for receiving and holding the yarn. The flat spring has a longitudinal recess which is adapted to receive the rib to which it is fastened.

3,638,686

CARRIERS FOR FILLING INSERTION IN A WEAVING MACHINE

Ramon Sole, and Othmar Bruhwiler, both of Brugg, Switzerland, assignors to Georg Fischer AG., Aargau, Brugg, Switzerland

Filed Nov. 23, 1970, Ser. No. 91,988
Claims priority, application Switzerland, Nov. 27, 1969, 17767/69
Int. Cl. D03d 47/18
U.S. Cl. 139—127 R 5 Claims



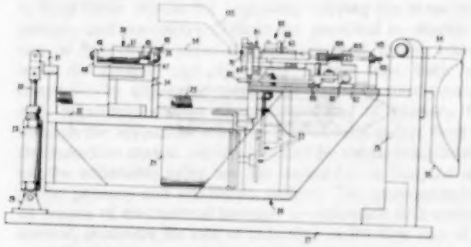
The invention relates to a pair of carriers for filling insertion from a filling supply package positioned outside of the warp shed in a weaving machine, said carriers consisting of an inserting carrier and of a withdrawing carrier, both of which are provided with a thread clamping device or thread end holding means.

3,638,687

WIRE-FORMING MACHINE

Gerald B. Bardo, Nichols, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 6, 1970, Ser. No. 52,338
Int. Cl. B21f 1/00
U.S. Cl. 140—71 24 Claims



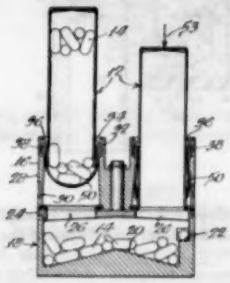
A wire-working machine in which the free end of a strand of wire is forced through a tunnel in a bending die to form a loop. The end of the strand of wire is held rigid by a brake mechanism and a movable wire guide. A drive mechanism moves the bending die forward causing the wire guide to be displaced longitudinally along the wire, thus forcing the end of the wire through the tunnel. A clamp and cut bar operated by a variable stroke toggle mechanism clamps the leading end of the wire as it emerges from the die tunnel. The bending die is driven in reverse from the die tunnel. The bending die is driven in reverse direction to draw wire from a supply through the wire guide which moves with the bending die a portion of the return distance. The clamp and cut bar is again operated by the variable stroke toggle to sever the loop from the strand and to unclamp the severed loop to permit removal by an article carrier to a subsequent work station.

3,638,688

CODED ORAL SOLIDS MAGAZINE AND DISPENSER

Robert M. Conklin, Muskegon; Albert P. Rogers, Spring Lake, and Walter L. Bessinger, Muskegon, all of Mich., assignors to Brunswick Corporation, by said Conklin and said Rogers

Filed Feb. 24, 1970, Ser. No. 13,465
Int. Cl. B65b 1/04, 3/04
U.S. Cl. 141—98 12 Claims



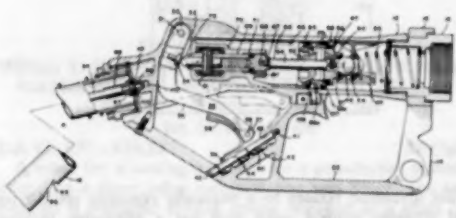
A pill-containing magazine and dispensing receptacle combination for use in pill-dispensing systems of the type having a plurality of receptacles, each for dispensing a different type of pill. Each magazine is provided with a code representing the type of pill contained therein and each receptacle from which the pills are to be dispensed is provided with a code sensing means that precludes operative association of a magazine bearing the wrong code, and therefore containing the wrong type of pill, with the receptacle to insure that only the correct type of pill can be dispensed from a given receptacle.

3,638,689

AUTOMATIC DISPENSING NOZZLE

Hans Erik Eklund, Malmo, Sweden, assignor to AB Ljungmans Verkstader, Malmo, Sweden

Filed May 29, 1969, Ser. No. 828,940
Int. Cl. B67d 5/373
U.S. Cl. 141—214 4 Claims



A lightweight, pistol-grip, automatic shutoff dispensing nozzle having a valve mechanism that is finger trigger actuated to control fluid flow through the nozzle with a fluid level sensing means at the discharge of the nozzle for automatically deactivating the valve mechanism upon fluid detection at a predetermined level or upon tilting of the nozzle beyond a predetermined angle thereby precluding fluid flow without resetting the valve mechanism or repositioning of the nozzle.

3,638,690
TIGHTENING BODY FOR GAS DISPENSERS

Poul Bjerregaard, 32 Neptunvej, Aarhus, Denmark

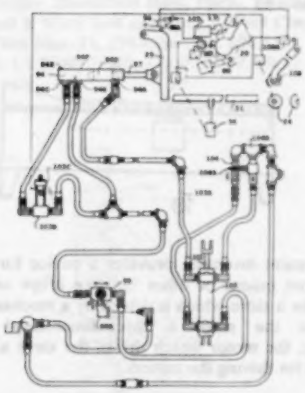
Continuation of application Ser. No. 529,430, Feb. 23, 1966, now abandoned. This application Mar. 19, 1969, Ser. No. 871,412
Int. Cl. B65b *1/04*
U.S. Cl. 141—354 12 Claims

A gas dispenser used for filling gas lighters carries a tightening body enclosing a filling tube extending form the neck of the dispenser. The front end of the tightening body fits around the front end of the filling tube and is resiliently adjustable so as to enclose the filling opening of a gas lighter and be adaptable to various shapes of gas lighters. The rear end of the tightening body is adapted to fit upon the neck of the dispenser and has a lesser axial resiliency than the front end.

3,638,691
POSITIONING SYSTEM WITH BUMPER RECEDING FROM STOPPED POSITION

Robert A. Larson, L'anse, Mich., assignor to Pettibone Corporation, Chicago, Ill.

Filed Feb. 9, 1970, Ser. No. 9,612
Int. Cl. B27b *5/02, 31/00*
U.S. Cl. 143—46 F 6 Claims

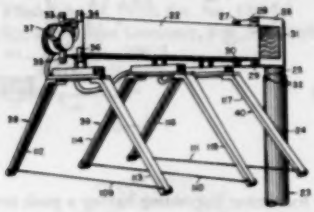


In a bumper system suitable for stopping tree trunks fed lengthwise in positions for cutting successive equal lengths from the trunk, a bumper system is provided which absorbs tree trunk momentum by dissipation of energy and stops the tree trunk in position for sawing. Subsequent binding of the cut lengths between the face of the bumper and the saw is prevented by further receding movement of the bumper. Using a three-port cylinder, the impact moves the piston inward to expel hydraulic fluid through the intermediate port in series with a relief valve which provides resistive back pressure. At the predetermined correct measuring position, the piston closes this intermediate port, temporarily stopping the bumper and the tree trunk. During cutting, the more remote port is opened and oil is supplied to the near port to retract the bumper out of the way.

3,638,692
SHADOW LINE DEVICE

Andrew G. Carter, and Charles L. Morgan, both of Grand Rapids, Mich., assignors to Carter Products Company, Inc., Grand Rapids, Mich.

Filed Nov. 25, 1969, Ser. No. 879,730
Int. Cl. B27b *27/02*
U.S. Cl. 143—168 B 6 Claims

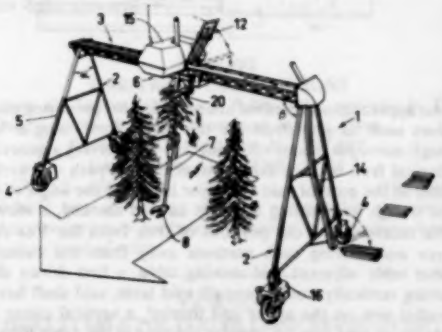


A shadow line device having a group of independent projector units, each of these including a light source, a shadow-producing line, and a carrier. The carriers are mounted on a guideway transverse to the shadow lines, and are positioned along the guideway by a cable system to produce movement of the shadow line corresponding to the movement of a selected machine component associated exclusively with that particular shadow line.

3,638,693
FOREST HARVESTER

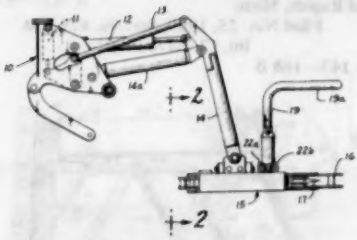
Ulf Hjalmar Sundberg, 36, Villavagen, Stocksund, Sweden

Filed Mar. 4, 1970, Ser. No. 16,536
Int. Cl. A01g *23/02*
U.S. Cl. 144—3 D 11 Claims



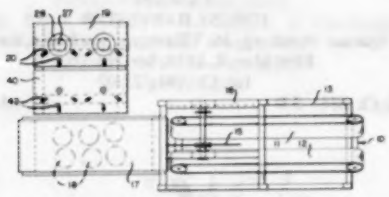
A forest-harvesting machine of the type intended for separating standing trees, for processing the trees thus separated and for collecting the trees thus processed or parts thereof. The invention, more precisely, relates to a forest harvester comprising a mobile carrying structure which is upright in operation position and supports thereon a tree-processing arrangement comprising at least separating and limbing means, preferably also cutting and/or barking means.

3,638,694
PUSH ARM
Ramon H. Robinson, Dallas; Charles A. Ramsel, Giddings, and Charles A. Deckert, Deer Park, all of Tex., assignors to Youngstown Sheet and Tube Company, Youngstown, Ohio
Filed Mar. 20, 1970, Ser. No. 21,381
Int. Cl. A01g *23/02*
U.S. Cl. 144—34 A 3 Claims



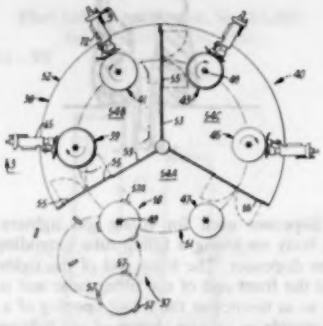
A shear for timber harvesting having a push arm for pushing the tree being felled in the desired direction during the shearing operation.

3,638,695
APPARATUS FOR PREPARING CITRUS HALVES
Hans W. Grotewald, Sebring, Fla., and Don S. Bryan, Box 154, Bartow, Fla.
Filed Jan. 26, 1970, Ser. No. 5,611
Int. Cl. A23n *15/02*
U.S. Cl. 146—3 R 8 Claims



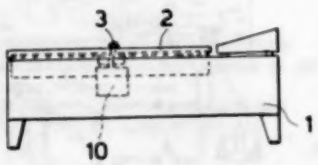
An apparatus and method are provided for preparing citrus halves such as grapefruit for the table, comprising a Vee trough conveyor means receiving and transferring a generally spherical fruit with its axis transverse to its path of travel, a cutter in the path of said conveyor bisecting the angle of the Vee trough and cutting the fruit carried thereby, a moving table receiving the cut portions of fruit from the Vee conveyor and moving such portions away from the cutter, a cutter table adjacent said moving table, a first driven shaft moving vertically axially beneath said table, said shaft having a radial arm on the upper end thereof, a vertical cutter adjustable on said arm, an annular opening in the table through which said cutter projects when said first shaft is raised, means acting on said first shaft selectively to raise and lower the same, a second driven shaft spaced from the first, movable vertically axially beneath the table, a hole cutter on said shaft, an opening in the table through which said hole cutter extends when said second shaft is raised, means acting on said second shaft selectively to raise and lower the same, stop means on the tabletop adjacent each of the annular opening and the hole cutter opening whereby halves of fruit are positioned and drive means acting on each of the first and second shafts.

3,638,696
MEANS FOR PEELING PINEAPPLES
Malcolm W. Loveland, Orinda, Calif., assignor to Atlas Pacific Engineering Company
Continuation-in-part of application Ser. No. 612,584, Jan. 30, 1967, now Patent No. 3,473,588. This application Aug. 22, 1969, Ser. No. 852,251
Int. Cl. A23n *7/00*
U.S. Cl. 146—6 11 Claims



Means are provided for peeling and preparing pineapples with a minimum of hand labor and a maximum yield of fruit for canning and other uses.

3,638,697
APPARATUS FOR TOPPING ONIONS OR SIMILAR BULBCROPS
Gerardus Wilhelmus Marie Krekelberg, Roerzicht 36, Roermond, Netherlands
Filed Apr. 9, 1969, Ser. No. 814,750
Claims priority, application Belgium, Apr. 11, 1968, 713,522
Int. Cl. A23n *15/04*
U.S. Cl. 146—83 5 Claims



The present invention provides a device for cutting the tailings from onions or other bulblike crops and generally provides for a sieve which is driven by a mechanism so as to impart to the sieve a three-dimensional movement. Preferably, the motor which drives the sieve also serves as the means for driving the cutters.

3,638,698
CROSSLINKED CARBOXYMETHYL CELLULOSE NITRATES PROPELLANTS
Alan L. Woodman, and Arnold Adicoff, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy
Filed Sept. 30, 1966, Ser. No. 584,059
Int. Cl. C06c *5/02*; C06d *5/06*
U.S. Cl. 149—2 6 Claims

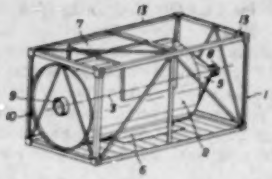
1. The composition consisting essentially of carboxymethyl cellulose nitrate, pentaerythritol trinitrate, ethyl centralite, and a cross-linking agent selected from the group consisting of ethylene bis(2-metyl-1-aziridine carboxylate), tris(2-

methyl-1-aziridinyl)phosphine oxide, bisphenol A-epichlorohydrin diepoxide, and a mixture composed of butyl glycidyl ether and bisphenol-epichlorohydrin diepoxide.

3,638,699
STRUCTURE FOR TRANSPORTING AND STORING FLOWABLE MATERIALS

Bruno Hillinger, Vienna, Austria, assignor to Waagner-Biro Ag., Vienna, Austria

Filed July 30, 1969, Ser. No. 846,173
Claims priority, application Austria, Aug. 2, 1968, A 7537/68
Int. Cl. B65d *33/14*
U.S. Cl. 150—.5 **5 Claims**

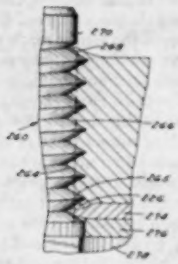


A structure for transporting and storing flowable materials. The structure includes a silo compartment, which has a central axis, this compartment being adapted to receive and discharge flowable materials when its axis is upright and being adapted to transport the materials when its axis is in a substantially horizontal attitude. The silo compartment is made of a foldable sheet material so that it can be readily placed in a collapsed condition when it is not used. A supporting framework extends around and is operatively connected with the silo compartment to support the latter both with its axis upright and with its axis in the substantially horizontal attitude.

3,638,700
FASTENER AND METHOD OF FORMING SAME

George R. Onufer, Bloomfield Hills, Mich., assignor to Russell, Burdsall & Ward Bolt and Nut Co., Port Chester, N.Y.

Filed Mar. 11, 1969, Ser. No. 806,119
Int. Cl. F16b *29/00, 37/00, 39/02, 39/22*
U.S. Cl. 151—69 **3 Claims**



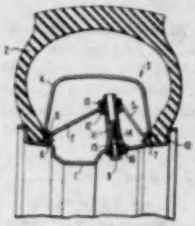
A nut member having a relatively smooth walled aperture for receiving a male threaded member, and a pair of radially extending spiral lip portions adjacent the opening to the aperture, which receive the threaded portion of the male member and guide it into the aperture, forming a female thread. The male threaded member may have an unthreaded cylindrical end which has a diameter approximately equal to the diameter of the aperture, which is the pitch diameter of the threads, which prevents inadvertant removal of the male member after it is threadably received through the aperture. The male member may then be partially withdrawn, deforming the crest portions adjacent the cylindrical end of the male member, permanently locking the assembly.

The method disclosed herein includes forming the body portion of the unthreaded member including the circular aperture, and forming the spiral lip portions by impacting the end. A mandrel having radial slots may be disposed within the aperture to form the lip portions.

3,638,701
EMERGENCY RUNNING RING FOR TUBELESS VEHICLE TIRES

Heinrich Georgi F. Rossler, Baden-Baden; Heinrich Baumann, and Falk Zeidler, both of Gaggenau, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Feb. 18, 1970, Ser. No. 12,326
Claims priority, application Germany, Feb. 19, 1969, P 19 08 204.3
Int. Cl. B60c *17/04*
U.S. Cl. 152—158 **12 Claims**



An emergency running ring for tubeless vehicle tires in which several hollow ring segments abutting against one another with the end faces and having a cross section matched to the tube shape, are provided with expanding inserts arranged on the inside of the hollow ring segments; the expanding inserts are supported at the hollow ring segments and are clamped against the rim bed by means of a clamping screw or bolt, whereby a spacer sleeve is associated with each expanding insert and the clamping bolt or screw engages in the spacer sleeve.

3,638,702
TIRE TREAD COMPOSITIONS

Norman G. Endter, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 23, 1968, Ser. No. 707,487
Int. Cl. B60c *11/00;* **C08g** *51/08*
U.S. Cl. 152—330 **10 Claims**

Vehicle tires possessing a tread composition containing rubbery polymers, a methylene acceptor, a methylene donor and a low level of sulfur.

3,638,703
HEAT STABLE POLYESTER CORD REINFORCED RUBBER STRUCTURE

Norman G. Endter, 5 Rue Albert Roze, Amiens 80, France, and Frank J. Jenkins, 564 Alandale Drive, Tallmadge, Ohio

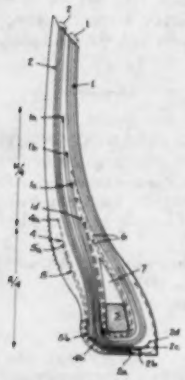
Filed Jan. 29, 1968, Ser. No. 701,093
Int. Cl. B60c *11/00;* **B29h** *5/01*
U.S. Cl. 152—330 **9 Claims**

Polyester cord reinforced rubber structures such as pneumatic tires are protected against heat degradation by the use of an acid reaction product of a methylene donor such as hexamethylenetetramine in combination with a methylene acceptor such as resorcinol.

3,638,704
PNEUMATIC TIRE
Jacques Boileau, Clermont-Ferrand, France, assignor to Compagnie Generale Des Etablissements Michelin, raison sociale Michelin & Cie, Clermont-Ferrand (Puy-de-Dome), France
Filed Dec. 3, 1968, Ser. No. 780,841
Claims priority, application France, Dec. 18, 1967, 132766; Feb. 3, 1968, 141171
Int. Cl. B60c 13/00
U.S. Cl. 152—353 4 Claims

A tire of the radial-carcass-type having a decorative circumferential band or ring on one sidewall is formed with grooves in the sidewall on either side of the circumferential ring to relieve the elastomer of which the ring is formed from the alternating stresses of tension and compression when the tire is in service and thereby retard the aging of the elastomer.

3,638,705
PNEUMATIC TIRE
Andre Devienne, and Jean Trzepaez, both of Compiegne (Oise), France, assignors to Uniroyal Englebert France S.A., Neuilly sur Seine, France
Filed Nov. 19, 1969, Ser. No. 878,112
Claims priority, application France, Dec. 31, 1968, 182,994
Int. Cl. B60c 15/06
U.S. Cl. 152—356 10 Claims

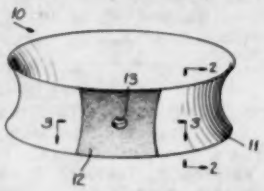


A heavy-duty, radial ply, pneumatic tire having normally flexible sidewall zones, reinforced, rigid bead zones, and transition zones of gradually decreasing stiffness extending outwardly from the bead zones to the sidewall zones. Each side of the tire includes: (1) an inner group of radial carcass plies, the ends of such plies being turned outwardly over a bead wire bundle and being staged so as to terminate at least at two different points in the transition zone; (2) an outer group of radial carcass plies, the ends of such plies being turned inwardly over the bead wire bundle and being staged so as to terminate at least at two different points in the bead zone; (3) a plurality of chafers having staged upper ends terminating at a plurality of different points in the transition zone; and (4) one or more flippers which encircle the bead wire bundle and at least a portion of an apex strip adjacent to the bead wire bundle.

3,638,706
MACROFILAMENTARY TIRE YARNS
Donald James Wilson, and Derek Kenyon, Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England
Filed Nov. 3, 1969, Ser. No. 874,088
Claims priority, application Great Britain, May 11, 1968, 52,416/68
Int. Cl. B60c 9/00; D02g 3/48
U.S. Cl. 152—359 9 Claims

A pneumatic tire reinforcement element comprising a single bundle of continuous macrofilaments of synthetic polymeric material selected from the group consisting of polyester and polyamide, wherein each macrofilament has a denier in the range 100 to 1,500, and the bundle has a total denier of 1,000 to 10,000 and a twist level not exceeding 4 turns per inch.

3,638,707
LOCALLY STRENGTHENED TIRE FLAPS
Jacques Le Gall, Compiegne, France, assignor to Uniroyal Englebert France S.A., Paris, France
Filed Jan. 10, 1969, Ser. No. 790,409
Claims priority, application France, Feb. 16, 1968, 140249
Int. Cl. B60c 21/04
U.S. Cl. 152—365 9 Claims

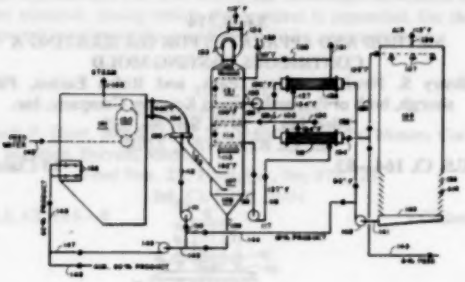


A novel construction for locally strengthened tire flaps made of rubber and having circumferentially uniform cross-sectional characteristics is disclosed, together with a method of producing such flaps. In the preferred form of the invention, the major portion of the flap is made of a standard soft rubber stock, while the remaining minor portion of the flap, in which the valve-stem-accommodating hole is provided, is made of a different rubber stock having, when cured, a greater hardness and resistance to distortion or tearing stresses than the standard rubber stock. The flap is produced by splicing the two ends of an appropriately short length of the raw hard rubber stock to the respective ends of an appropriately longer strip of the raw soft rubber stock, thereby forming a ring, and then introducing the ring into any suitable annular mold, e.g. a compression mold, for final shaping and curing by which the two rubber sections are vulcanized into an integral continuous structure.

3,638,708
METHODS OF MULTIPLE STAGE EVAPORATION FROM HEAT SOURCES OTHER THAN STEAM
William G. Farin, 707 Elm St., Neenah, Wis., Marathon Engineering Inc., Menasha, Wis.
Filed June 11, 1969, Ser. No. 832,309
Int. Cl. B01d 1/00, 1/16
U.S. Cl. 159—47 WL 3 Claims

A method of multiple stage evaporation incorporating direct contact evaporation, with the flue gas utilized to heat

water, the heated water utilized to heat liquor for flash evaporation to a vacuum. The condensed vapors are then



used to heat liquor that is air contact evaporated to provide 3 stages of evaporation. Low-quality flue gas heat is also used to heat liquor for air contact evaporation.

3,638,709

METHOD OF SUSPENDING IMMOBILIZED BIOLOGICAL SPECIMENS IN A TRANSPARENT GEL IN A TRANSPARENT CONTAINER

John H. Brown, Jr., and Bobby L. Atkins, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 11, 1969, Ser. No. 884,344

Int. Cl. A01n *1/00, 3/00*

U.S. Cl. 156—57 **7 Claims**

A visible immobilized specimen suspended in a stable, continuous gel where the gel is a transparent adduct of a cross-linked vinyl polymer and a water-soluble aldehyde. Such immobilized specimen is prepared by providing an optically transparent container, introducing into the container a liquid phase containing a water-soluble vinyl monomer, a water-soluble aldehyde, a cross-linking agent and a free radical producing catalyst. A specimen is positioned in the liquid phase and held in position until the polymerization of the liquid phase produces sufficient gel strength to immobilize the specimen. The container is then sealed to prevent evaporation.

ERRATUM

For Class 159—471 see:
Patent No. 3,638,708

3,638,710

LIFTING GATE

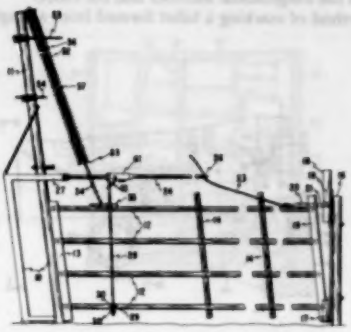
Henry L. Sundermann, Box 79, Rte. 4, Sioux Falls, S. Dak.

Filed Apr. 27, 1970, Ser. No. 32,023

Int. Cl. E06b *3/92*

U.S. Cl. 160—144 **5 Claims**

A farm gate adapted to be opened by collapsing vertically. Ropes fastened to the gate and runover pulleys to posts adjacent the track entering and leaving the gate provide means for raising the gate. An over-the-center arrangement holds



the gate open until another pull on the rope triggers a release mechanism to close the gate.

3,638,711

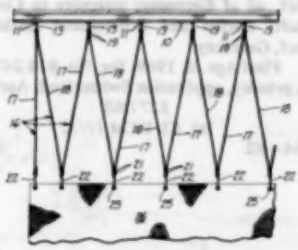
CUBICLE CURTAIN SUSPENSION APPARATUS

Victor A. Mazzarelle, West Covina, Calif., assignor to Kassler Investment Corporation, Covina, Calif.

Filed June 12, 1970, Ser. No. 45,849

Int. Cl. A47h *1/00*

U.S. Cl. 160—330 **5 Claims**



An apparatus for suspending cubicle curtains or the like, particularly those used in hospitals, nursing homes, etc. from a plurality of carriers mounted for sliding movement along an overhead track. A cord is suspended at its upper end from the carriers and connected at its lower end to the upper portion of the curtain. The cord comprises a plurality of strands directed diagonally to each other to form a sawtooth pattern which provides automatic self-alignment of the carriers. The cord is preferably formed of synthetic material which is capable of being cleaned.

3,638,712

BILLET-MARKING APPARATUS AND METHOD OF MARKING

Walter B. Rudov, Pittsburgh, Pa., assignor to United States Steel Corporation

Filed Aug. 17, 1970, Ser. No. 64,480

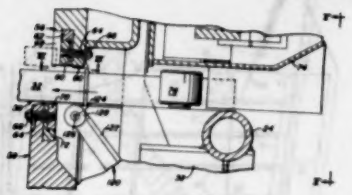
Int. Cl. B22d *11/12;* **B44b** *5/02*

U.S. Cl. 164—76 **24 Claims**

A marking device for a continuous billet-casting apparatus and a method of marking a billet are disclosed. The marking device is associated with a shearing device of the continuous billet-casting apparatus for shearing a longitudinal member and such marking device has a marking member on one

blade of the stationary blade and the movable blade. The marking member is operable by relative movement between the stationary blade and the movable blade to shear the longitudinal member into a billet and to mark a predetermined indicia on the longitudinal member and the billet.

The method of marking a billet formed from a longitudinal



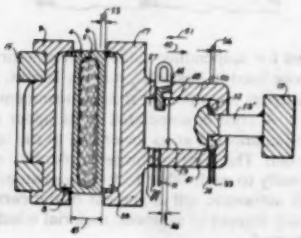
member produced by a continuous billet casting apparatus includes the steps of simultaneously shearing the longitudinal member into a billet of predetermined length and marking one member of the billet and the longitudinal member, moving the billet to a marking station and further marking the billet at the marking station.

3,638,713

CONTINUOUS CASTING METHOD INCLUDING STRAND SUPPORT ADJUSTMENT

Bernard Knell, Thalwil, Switzerland; Paul Desfossez, Dillingen-Saar; Walter Hess, and Hans-Dieter Schulz, both of Dusseldorf, all of Germany, assignors to Concast Aktiengesellschaft, Zurich and Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed Apr. 8, 1969, Ser. No. 814,247
Claims priority, application Switzerland, Apr. 9, 1968, 5272/68
Int. Cl. B22d *11/12*
U.S. Cl. 164—82 **2 Claims**



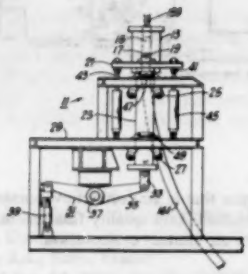
A continuous casting method wherein a support and guide for a continuously cast metal strand that has a still-molten core within a solidified shell includes a plurality of members each mounted for movement toward and away from the strand at one side thereof. Each member carries a number of rolls or other contact elements adapted to engage the strand, and each has one stop adjustably positioned to stop movement of the member, and its contact elements, away from the strand at a specific predetermined point and thereby limit bulging of the strand (from ferrostatic pressure of the core) to an acceptable amount. Another stop is provided on each member to stop movement of each member toward the strand at a point at which the contact elements can engage the thinnest portion of the strand, or the dummy bar used for starting the casting. In the form illustrated the members are guided, and may be moved, by pistons and cylinders. Gravity, fluid pressure or spring pressure may be utilized to urge the contact elements into engagement with the strand.

3,638,714

METHOD AND APPARATUS FOR OSCILLATING A CONTINUOUS CASTING MOLD

Henry S. Newhall, Allison Park, and Rufus Easton, Pittsburgh, both of Pa., assignors to Koppers Company, Inc.

Filed Jan. 5, 1970, Ser. No. 639
Int. Cl. B22d *11/02, 27/08*
U.S. Cl. 164—83 **13 Claims**



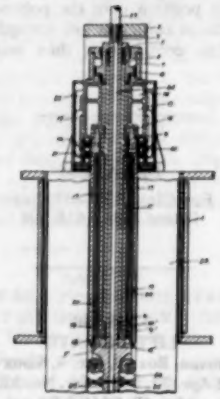
A continuous casting mold, having either a straight or a curved casting cavity, is pivotally mounted to a frame that reciprocates vertically and pivots upon a horizontal axis through the mold as it reciprocates. A cast strand emerging from the mold curves toward the horizontal under the combined influence of the pivotal and reciprocal motion of the mold.

3,638,715

METHOD FOR THE CONTINUOUS CASTING OF TUBES

Willi Simons, Duesseldorf, Germany, assignor to Schloemann Aktiengesellschaft, Duesseldorf, Germany

Filed Feb. 26, 1970, Ser. No. 14,298
Claims priority, application Germany, Feb. 27, 1969, P 19 09 881.8
Int. Cl. B22d *11/00*
U.S. Cl. 164—85 **3 Claims**



Apparatus for the continuous casting of tubes includes a mandrel which extends into the mold. The diameter of the

mandrel is expandable and contractable, suitably by having the mandrel composed of radially movable segments. During casting the diameter of the mandrel is expanded when there is no relative movement between the tube being formed and the mandrel, and is contracted when the tube moves relatively off the mandrel. In oscillating molds, in which the mandrel also oscillates, there would be no relative movement between the mandrel and the tube during the downward movement of the mandrel, during which the mandrel is expanded. On the upward movement the mandrel would be contracted.

3,638,716

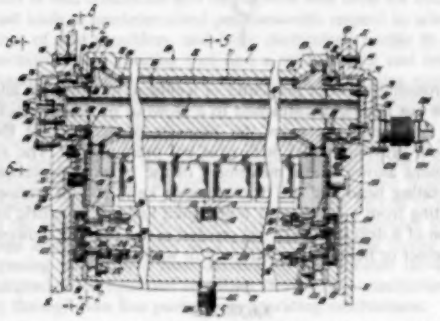
REGENERATOR SEAL

Jack P. Hart, Hinsdale, Ill., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 25, 1969, Ser. No. 879,729

Int. Cl. F28d *19/04*

U.S. Cl. 165—9 **3 Claims**



A rotary regenerator of the drum-matrix-type. The regenerator matrix is located and supported by two parallel rollers engaging the matrix rims at the inner or hot face of the matrix adjacent the bulkhead. The main seals are pivoted adjacent the drive rollers so that they can rotate to align with the matrix notwithstanding expansion and distortion. The angular position of the main seals is determined by aligning rollers engaging the outer or cold face of the matrix and mounted on the main seal frame. These are biased into engagement with the matrix by springs. The particular subject matter is improved structure of the main seals including the frame, roller mounts, cooling provisions, side seals, the secondary seal, and connection of the frame to the regenerator bulkhead.

3,638,717

REFRIGERATOR-FREEZER WITH MEAT KEEPER

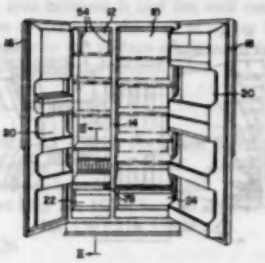
Philip F. Harbour, and Anthony J. Swaneck, both of Columbus, Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of application Ser. No. 725,853, May 1, 1968, now abandoned. This application Aug. 25, 1969, Ser. No. 852,628

Int. Cl. F25b *29/00*

U.S. Cl. 165—30 **14 Claims**

A side-by-side refrigerator-freezer having a meat keeper compartment located at the bottom of the freezer section in a space substantially isolated from the main freezer section by insulated partitions in a first position, the partitions being movable to a second position to change the airflow path so



that the meat keeper compartment space is converted to supplemental freezing space.

3,638,718

APPARATUS FOR THE AUTOMATIC CONTROL OF BLOWERS FOR THE CONTROLLED VENTILATION OF HEAT EXCHANGERS

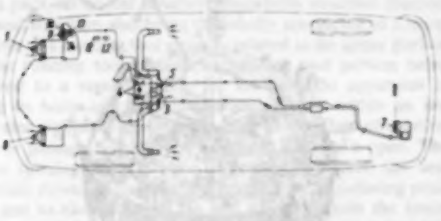
Manfred Illg, Aldingen, Germany, assignor to Firma Suddeutsche Kuhlerfabrik Julius Fr. Behr, Stuttgart-Feuerbach, Germany

Filed Mar. 11, 1970, Ser. No. 18,527

Claims priority, application Germany, Mar. 12, 1969, P 19 12 613.7

Int. Cl. B60h *1/00*

U.S. Cl. 165—39 **6 Claims**



Apparatus for automatically controlling ventilators of heat exchangers, especially for ventilating condensers of an air conditioning plant with two heat exchangers having each a blower with a temperature controlled changeover switch (11) in the current supply line for the blower motors (8, 9) for shifting the blower motors from series to parallel operation when a selectable temperature is exceeded.

3,638,719

HEAT EXCHANGER

Rodney McGann, Northridge, Calif., assignor to Texaco, Inc., New York, N.Y.

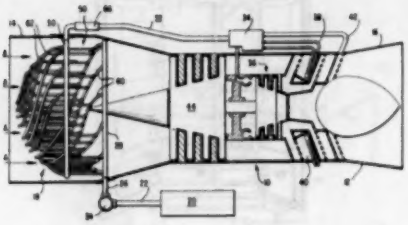
Filed Feb. 20, 1964, Ser. No. 346,197

Int. Cl. F28d *7/04*

U.S. Cl. 165—164 **5 Claims**

A heat exchanger comprising a bundle of substantially parallel pipes, the ends of said pipes presenting a convex configuration at one end of the bundle and a concave configuration at the other end of the bundle, the length and the relative displacement of the pipes in said bundle being such that

the total transverse area of the pipes in any transverse plane through said bundle is substantially less than the total projected transverse area of the pipes of the bundle, input

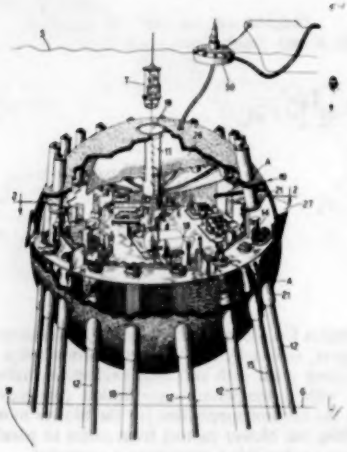


header means supplying fluid to one end of the pipes in said bundle, and outlet header means withdrawing fluid from the other end of the pipes in said bundle.

3,638,720
METHOD AND APPARATUS FOR PRODUCING OIL FROM UNDERWATER WELLS

John P. Thomas, Brooklyn, N.Y., assignor to Ocean Systems, Inc.

Filed Sept. 24, 1968, Ser. No. 762,050
Int. Cl. E21b *7/12, 43/01*
U.S. Cl. 166—.5 **10 Claims**

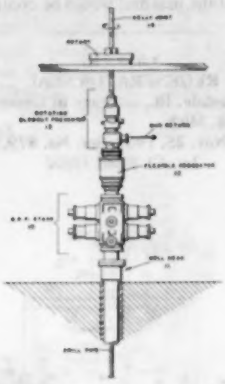


A buoyant capsule for producing oil from a plurality of underwater wells, the buoyant capsule being held in submerged position by conduit means anchored in the floor of the body of water which permit controlled lateral movement of the capsule resulting from wave action. The pressure within the capsule is regulated to maintain an ambient environment, and means are provided within the capsule for compounding a nonexplosive, noncombustible gas mixture conductive to human operation.

3,638,721
FLEXIBLE CONNECTION FOR ROTATING BLOWOUT PREVENTER

Otto R. Harrison, New Orleans, La., assignor to Esso Production Research Company

Filed Dec. 10, 1969, Ser. No. 883,727
Int. Cl. E21b *33/035*
U.S. Cl. 166—.5 **7 Claims**

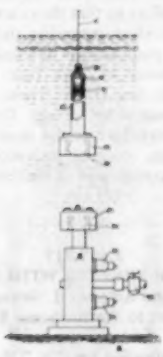


A rotating blowout preventer or wellhead mounted on and above but not rigidly attached to a blowout preventer stack. The attachment between the blowout preventer and the blowout preventer stack is flexible but pressuretight. The attachment allows lateral movement of the blowout preventer or rotating head and the drill string or kelly so that stresses resulting from a crooked or nonaligned kelly or eccentric location of a drill string are not created in the rotating blowout preventer or head while stationary or while rotating.

3,638,722
METHOD AND APPARATUS FOR REENTRY OF SUBSEA WELLHEADS

William A. Talley, Jr., Dallas, Tex., assignor to Mobil Oil Corporation

Filed Dec. 11, 1969, Ser. No. 884,110
Int. Cl. E21b *33/035*
U.S. Cl. 166—.5 **8 Claims**



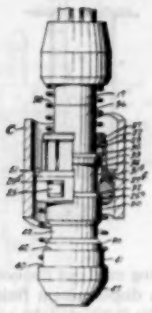
A lubricator for use in reentry of a subsea well and a workover tool enshrouded within the lubrication are lowered from the surface to a subsea wellhead on a wire line. The lubricator is then connected to the wellhead by a hydraulically actuated latch and the workover tool is lowered into the well to perform a workover operation.

3,638,723

LOCATOR DEVICES

Albert W. Carroll, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed June 22, 1970, Ser. No. 48,264
Int. Cl. E21b *23/00*
U.S. Cl. 166—215 24 Claims



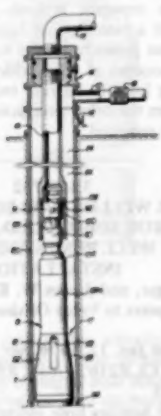
A locating tool for use in a well flow conductor for locating each or any one of a plurality of oppositely facing shoulders in said conductor and usable with well tools for locating said tools at predetermined positions with respect to selected ones of said shoulders, and more particularly usable in connection with a running tool and a well locking and sealing mandrel device for locating said locking and sealing mandrel device in registry with any one of a plurality of receptacles in said conductor for supporting a well tool therein. The running tool is operable to set the locking and sealing mandrel device in the selected receptacle only after the locator device has located the receptacle and is releasable from the mandrel device only after the same has been locked in place in the receptacle. The locking device is also operable to engage and shift any one of a plurality of sliding sleeve side opening valves in a flow conductor. The locator device is adapted to be operated by either flexible line mechanism or by through flow line pumpdown operating mechanisms.

3,638,724

SAFETY SHUTOFF VALVE FOR CONTROLLING FLUID FLOW FROM GAS STORAGE WELLS AND RESERVOIRS

John V. Salerni, Whittier, Calif., assignor to Baker Oil Tools, Inc., Commerce, Calif.

Original application Mar. 2, 1970, Ser. No. 15,403, now Patent No. 3,580,332. Divided and this application Apr. 27, 1970, Ser. No. 31,974
Int. Cl. E21b *33/00*
U.S. Cl. 166—224 26 Claims



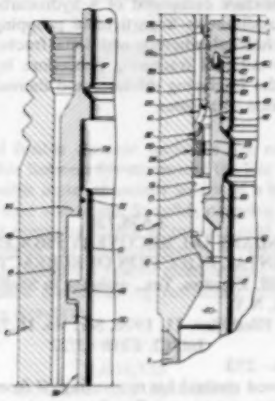
A control valve is run and set in a cased well bore, and preferably in connection with a packer, or the like, secured to the well bore casing. A plug is set in the valve, after which a tubing is connected to the plug and fluid pressure applied thereto to open the valve so that gas from the well or reservoir can flow through the packer, or the like, and open valve into the tubing-casing annulus and into a gas delivery line at the top of the well bore. The valve is tapered to provide a greater annular area between it and the well casing to allow unrestricted flow of gas from the well at a very high rate. In the event of damage to the surface equipment, the well pressure automatically closes the control valve.

3,638,725

DIRECT DRIVE CASING HANGER APPARATUS

Arthur G. Ahlstone, Ventura, Calif., assignor to Vetco Offshore Industries, Inc., Ventura, Calif.

Filed May 15, 1970, Ser. No. 37,527
Int. Cl. E21b *33/00*
U.S. Cl. 166—226 16 Claims



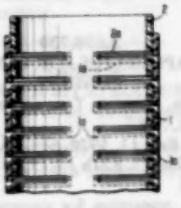
Well bore casing hanger apparatus in which a hanger body has a pack-off or seal structure threadedly mounted thereon, the seal structure also being threadedly connected to a lower portion of a running tool swivelly related to an upper portion of the running tool, the upper running tool portion being secured to a running string for lowering the apparatus to bring its body into engagement with a seat within an underwater wellhead housing, at which time a fluid circulation path or passage between the body and housing is open. The upper running string portion is rotated to thread the seal structure downwardly along the body to passage-closing position and to also unthread the seal structure from the lower running tool portion, which permits the running string and running tool to be elevated from the hanger apparatus and withdrawn to the drilling rig.

3,638,726

WELL SCREENS

David L. Sibley, Woodwyn Lane, Paragould, Ark.

Filed Nov. 5, 1969, Ser. No. 874,315
Int. Cl. E03b *3/20*; E21b *43/08*
U.S. Cl. 166—236 4 Claims



The well screen has an outer tube and a telescoping inner tube. The tubes have identical horizontal series of slots

therein. The outer tube is initially adjusted longitudinally with respect to the outer tube to gauge the slot openings through the communicating slots of the tubes. Solvent cement is used for securing the tubes in adjusted position.

3,638,727
METHOD OF TREATING A SUBTERRANEAN HYDROCARBON-BEARING FORMATION
Joseph C. Allen, Bellaire, Tex., and Charles L. Bauer, New York, N.Y., assignors to Texaco Inc., New York, N.Y.
Filed Sept. 27, 1968, Ser. No. 786,791
Int. Cl. E21b *43/24*
U.S. Cl. 166—259 4 Claims

Improved treatment of a subterranean hydrocarbon-bearing formation is effected by fracturing the formation using a fracturing mixture composed of a hydrocarbon liquid containing, in addition to a particulate propping agent, finely suspended charcoal, whereby additional fracturing is attained after a conventional fracturing procedure by in situ combustion of the fracturing mixture, and thereafter quenching the combustion with water.

3,638,728
SECONDARY OIL RECOVERY PROCESS WITH INCREMENTAL INJECTION OF SURFACTANT SLUGS
Harold J. Hill, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.
Filed Mar. 11, 1970, Ser. No. 18,734
Int. Cl. E21b *43/22*
U.S. Cl. 166—273 6 Claims

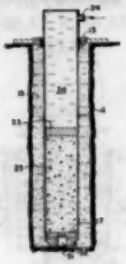
An improved method for recovering oil from underground formations by prior to waterflooding, treating said formations with at least two chemical slugs each containing a synergistic mixture of particular surfactants namely sulfonate-sulfate mixture wherein one slug is compatible with water of high salinity and hardness and the other slug is compatible with the floodwater which optionally can contain a thickener.

3,638,729
WATER FLOODING METHOD USING GEL AND VISCOSITY-INCREASING MATERIALS
Harry W. Parker, Lubbock, Tex., assignor to Phillips Petroleum Company
Filed May 27, 1970, Ser. No. 41,066
Int. Cl. E21b *43/22*
U.S. Cl. 166—273 9 Claims

A water flooding method wherein gel and viscosity-increasing materials are separately, intermittently injected into a stream of floodwater being injected into one or more wells to develop and maintain a uniform flood front.

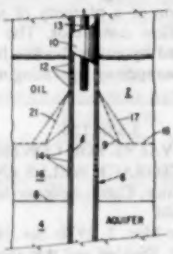
3,638,730
METHOD AND APPARATUS FOR CEMENTING A WELL CONDUIT
Hubert Irvin Smith, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.
Filed Feb. 11, 1970, Ser. No. 10,543
Int. Cl. E21b *33/13, 33/16*
U.S. Cl. 166—291 6 Claims

A method and apparatus for cementing a well conduit disposed within a well borehole extending into a subterranean earth formation, the conduit being open at the bottom thereof and having drilling mud therein and an annulus formed between the conduit and the well borehole. A solidifiable slurry is pumped down the well conduit thereby



displacing the drilling mud out the bottom of the conduit and up the annulus. A displacement fluid is pumped down the well conduit thereby displacing the solidifiable slurry out the opening at the bottom of the conduit during the displacement of at least an initial portion of the solidifiable slurry.

3,638,731
MULTIPLE PRODUCING INTERVALS TO SUPPRESS CONING
Vance J. Driscoll, Fort Worth, Tex., assignor to Amoco Production Company, Tulsa, Okla.
Filed Aug. 17, 1970, Ser. No. 64,451
Int. Cl. E21b *43/00, 43/119*
U.S. Cl. 166—314 10 Claims

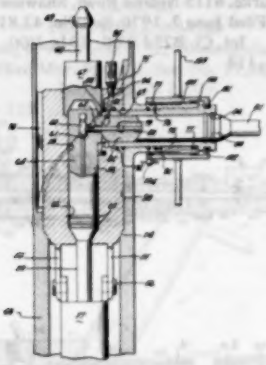


In wells subject to water and/or gas coning, hydrocarbons and undesired fluids are produced into the well in commingled form from separate spaced intervals. The well is produced at such a rate that an equal pressure drop —and therefore the same pressure profile for a given distance away from the well —occurs at all producing levels. This permits the oil-producing level to be rate independent provided undesired fluids from the other producing level(s) are produced in the proportion required.

3,638,732
UNDERWATER WELLHEAD ELECTRIC CONNECTION APPARATUS FOR SUBMERGED ELECTRIC MOTOR DRIVEN WELL PUMPS AND METHOD OF INSTALLATION
Fritz R. Huntsinger, and James W. E. Hanes, both of Ventura, Calif., assignors to Vetco Offshore Industries, Inc., Ventura, Calif.
Filed Jan. 12, 1970, Ser. No. 2,241
Int. Cl. E21b *33/035, 43/01, 23/04*
U.S. Cl. 166—315 29 Claims

An underwater bottom hole electrically driven well pump has an electric power cable extending to the wellhead, a con-

nectable and disconnectable electrical connection being provided at the wellhead between the cable and the power cable adapted to extend to a power source, the connection being



disconnectable and connectable at the wellhead to permit the pump to be pulled from the well, or run back into the well, through the wellhead and production tree without necessitating removal of the wellhead and production tree.

3,638,733

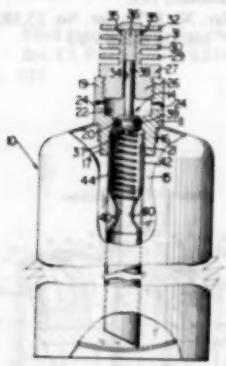
HEAT OPERATED FIRE EXTINGUISHER

Matthew De Rouville, Kinnelon; Alfred John Munn, Wayne, both of N.J., and Arne H. Hansen, New City, N.Y., assignors to Walter Kidde & Company, Inc., Belleville, N.J.

Filed Mar. 3, 1970, Ser. No. 16,039

Int. Cl. A62c *37/06*

U.S. Cl. 169—19 **4 Claims**



A heat operated fire extinguisher wherein a piston closing the mouth of the extinguishing agent pressure vessel is held in the sealing position by a plug of heat fusible material. This plug melts releasing the piston and discharging the pressure vessel when the ambient temperature indicates the presence of a fire.

3,638,734

REINFORCED FUSIBLE ELEMENT

Wayne E. Ault, Aurora, Ohio, assignor to A-T-O Inc., Willoughby, Ohio

Continuation-in-part of application Ser. No. 806,123, Mar. 11, 1969. This application Sept. 23, 1970, Ser. No. 74,810

Int. Cl. A62c *37/30*

U.S. Cl. 169—42 **6 Claims**

A reinforced fusible element useful in fire extinguishing sprinklers, fusible links on fire doors and the like is disclosed wherein the fusible material usually solder of a lead alloy or the like is provided with a thin frangible covering for stabilizing its size and shape by acting to prevent cold flow of the alloy as a result of compressive or tension forces thereagainst. Specifically a fusible element may be provided with a thin plated metal coating restricting growth due to cold flow in any direction.

3,638,735

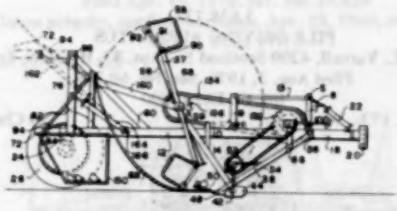
ROCK PICKUP MACHINE

Nick Deneky, General Delivery, Stirling, Alberta, Canada

Filed Nov. 26, 1969, Ser. No. 880,098

Int. Cl. A01b *43/00*

U.S. Cl. 171—63 **21 Claims**



A pickup reel has tracks and rollers which position pickup fingers as the reel is rotated. A step formed in the track causes the fingers to shake during rotation thus clearing same and the fingers are resiliently hinged to clear immovable objects they might encounter.

3,638,736

CORNER BIT STRUCTURE

Frederick C. Hahn, Beaverton, Oreg., assignor to Esco Corporation, Portland, Oreg.

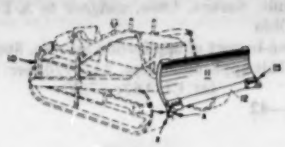
Filed June 25, 1969, Ser. No. 836,539

Int. Cl. A01b *15/00, 35/32*

U.S. Cl. 172—719 **3 Claims**

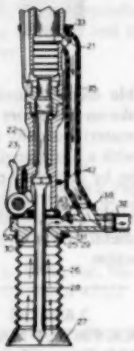
A corner bit for an earth-working element such as a dozer blade adapted to be mounted forwardly of a tractor or the

like, the bit being an essentially triangular plate having flanges providing a mounting groove and releasably secured



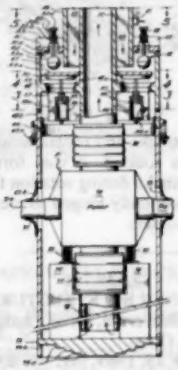
to the earth-working element by means of a shear block centrally of the plate.

3,638,737
PNEUMATIC DRILL NOISE MUFFLER AND DUST REMOVAL APPARATUS
David G. Moates, P.O. Box 2352, New Bern, N.C.
Filed Jan. 13, 1970, Ser. No. 2,538
Int. Cl. E21c *7/02*
U.S. Cl. 173—60 **1 Claim**



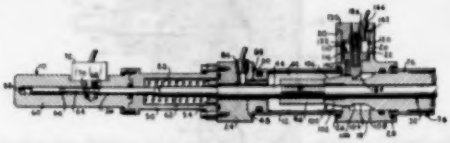
A modified pneumatic drill muffles the exhaust air noise and channels the air either by itself or combined with other compressed air to create a suction effect which removes drill dust, small rock bits and the like from the hole being drilled.

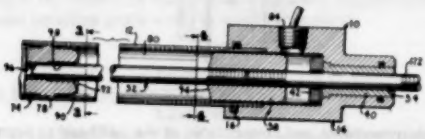
3,638,738
PILE DRIVING APPARATUS
Dexter L. Varnell, 4200 Scotland St., Apt. 82, Houston, Tex.
Filed Aug. 3, 1970, Ser. No. 60,289
Int. Cl. E02d *7/00*
U.S. Cl. 173—90 **10 Claims**



Pile driving apparatus adapted to apply a driving force to casing or piling to force same into the ground, wherein successive slugs of water are dropped under pressure to impart successive down blows to the apparatus, which blows are transmitted to the casing or piling, whereby increased blows can be imparted with a minimum weight for the apparatus.

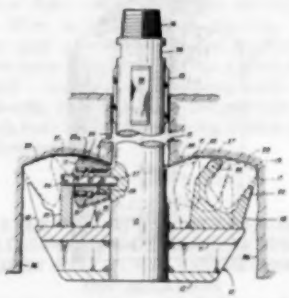
3,638,739
PNEUMATIC TRANSDUCER
Gordon H. Burke, 6115 Noland Road, Shawnee, Kans.
Filed June 2, 1970, Ser. No. 42,814
Int. Cl. B25d *9/00*; **E21c** *3/00*
U.S. Cl. 173—114 **12 Claims**





An elongated cylinder having an axially extending rod projecting from one end and adapted for attachment to a tool such as a punch or the like. A massive piston in the cylinder and slidable on the rod is forced by air pressure into impactive engagement with a collar anvil mounted on the rod. The force of impact drives the rod longitudinally to operate the tool and valves control the air for reciprocating the piston to and from its initial, latched position. The striking faces of the piston and anvil are tapered to avoid damage from the forces of impact.

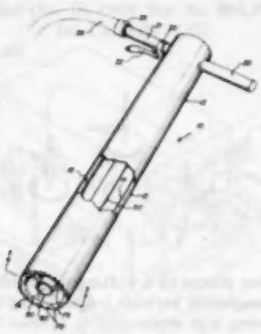
3,638,740
RAISE DRILLING BIT
Dan B. Justman, Houston, Tex., assignor to G. W. Murphy Industries, Inc., Houston, Tex.
Filed Mar. 30, 1970, Ser. No. 23,583
Int. Cl. E21b *9/22*
U.S. Cl. 175—53 **7 Claims**



A rotary drill for producing a raise bore including a body having roller cutter assemblies arranged to cut the working face of an earth formation so that the plane of an inner portion of the working face inclines downwardly and inwardly towards a pilot hole, and the plane of an outer portion of the working face inclines downwardly and outwardly towards the

gage of the raise bore, and the plane of an intermediate portion of the working face extends between the inner and outer inclined portions. This abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,638,741
POST HOLE BORER
Joseph P. Zizak, 5791-2½ St. N.E., Minneapolis, Minn.
Filed Mar. 9, 1970, Ser. No. 17,368
Int. Cl. E21b *21/00*
U.S. Cl. 175—215 9 Claims

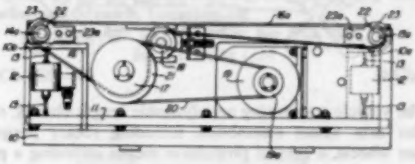


A hydraulic boring tool or post hole borer in the form of a cylindrical structure having an inner cylinder member spaced therefrom to define an area into which water under pressure is introduced with a discharge of the water to take place at the bottom of the structure and on an inclined plane to erode the soil within the cylindrical structure and below the same for the purpose of digging post holes.

3,638,742
WELL BORE SEAL APPARATUS FOR CLOSED FLUID CIRCULATION ASSEMBLY
William A. Wallace, 2438 Lord Baronof Ave., Anchorage, Alaska
Filed Jan. 6, 1970, Ser. No. 850
Int. Cl. E21b *17/10*; E21c *9/00*
U.S. Cl. 175—325 7 Claims

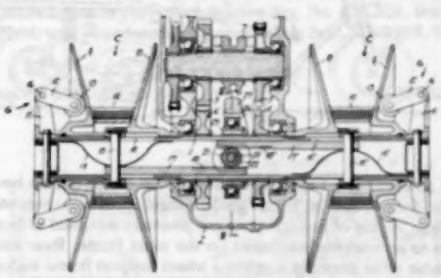
A well bore seal apparatus for a closed fluid circulation assembly, wherein one or more seal means are disposed to engage a well bore for sealing off the annulus externally of the closed fluid circulation assembly so that air, drilling mud, water and other fluids are sealed off from the annulus during drilling operations. This invention is especially suitable for drilling in permafrost, solid frozen ground and other solid formations which might be adversely affected by the presence of fluid in the annulus during drilling. The seal apparatus may also serve as a stabilizer during drilling, particularly when seal means are disposed at longitudinally spaced points on the assembly.

3,638,743
BELT CONVEYOR WEIGH SCALE
Edwin J. Douglas, Whittier, Calif., assignor to Hardy Scales Company, Maywood, Calif.
Filed Mar. 5, 1970, Ser. No. 16,695
Int. Cl. G01g *11/14*
U.S. Cl. 177—16 14 Claims



A base platform is suspended from within a supporting framework by load cells, preferably arranged as a three-point suspension. Belt conveyor pulleys, mounted between uprights rising from the base platform, provide a flat and elongate upper run for a conveyor belt adapted to receive and convey material such as parcel post packages to be weighed. Drive means are also supported by the base platform, and special belt-aligning means are provided to keep the belt tracking properly.

3,638,744
VEHICLE SPEED-CHANGE AND STEERING APPARATUS
Yoshikazu Washizawa, Fujimi-machi, Iruma-gun, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 16, 1970, Ser. No. 29,020
Claims priority, application Japan, Apr. 18, 1969, 44/29636
Int. Cl. B62d *11/10*
U.S. Cl. 180—6.2 7 Claims



A vehicle speed-change and steering apparatus comprises a pair of right and left stepless speed-change mechanisms each having a stationary pulley, a movable pulley and a belt interposed between the two pulleys, the pulleys being mounted on a driving shaft. A pair of rack rods are respectively connected to the right and left movable pulleys, and the rack rods are meshed with a single common pinion, such that the right and left movable pulleys are constrained to be moved in equal quantities in mutually opposite directions by the opera-

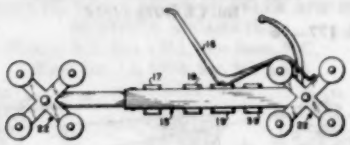
tion of a rotation detecting mechanism on the driving shaft and engaging the moving pulleys. Additionally, the right and left pulleys may be moved in the same directions by moving the pinion to the right or left to effect differential variation of speed of the belts of the speed-change mechanisms.

3,638,745

HYDRAULIC POWERED STAIR NEGOTIATING WHEEL CHAIR OR UNEVEN TERRAIN NEGOTIATING VEHICLE

Johnnie E. Floyd, 2609 East Side Drive, Austin, Tex.

Filed Jan. 27, 1970, Ser. No. 6,239
Int. Cl. B62b *5/02*
U.S. Cl. 180—8 A **11 Claims**



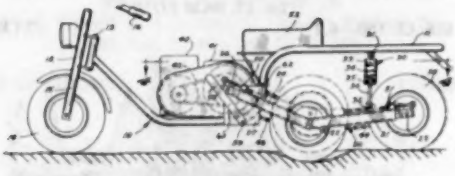
The vehicle comprising an adjustable length chassis, rotary spider arm wheel assemblies, including rotary peripheral minor wheels, a central propulsion means including a power source, a motor, and a pump which through a hydraulic system of flow dividers, check and control valves "T" and conduits applies a controlled differential action through a hydraulic wheel transmission to the wheel assemblies driving spider arms and rotating the peripheral wheels as required to accomplish a desired maneuver. The vehicle is capable of ascending and descending stairs or negotiating uneven terrain, maneuvering and spinning in place.

3,638,746

MOTORCYCLE HAVING TWO TANDEM DRIVING WHEELS

Lawrence A. Gostomski, Thorp, Wis., assignor to Right-Way Mfg. Corp., Owen, Wis.

Filed July 27, 1970, Ser. No. 58,359
Int. Cl. B62k *5/00*
U.S. Cl. 180—25 R **8 Claims**



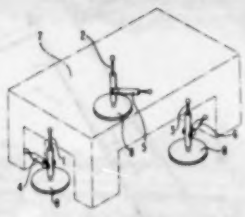
A three-wheeled motorcycle for use on rough terrain has a main frame and a front guide wheel pivotally mounted thereto. A pair of linkage arms are pivotally mounted at front ends to an intermediate point on the main frame. Rear ends of these arms pivotally support a wheel support frame including a pair of parallel spaced-apart bolsters. Two rear wheels are tandem mounted between the bolsters, the axle carrying the forward wheel of the pair forming the pivot for the connection between the arms and the bolsters, and the axle for the rear wheel of the pair being carried in bearings at rear ends of the bolsters. A pair of parallel, substantially vertical main frame support links are pivotally mounted to the wheel support frame at the bolsters one-third of the bolster length from the rear thereof and are pivotally mounted to the main frame substantially directly above the connection to the wheel support frame. A positive chain drive is provided from sprockets pivotally mounted concentrically with the mounting point of the linkage arms to the main frame to sprockets driving on said wheel axles. Means is provided for limiting downward pivotal movement of the linkage arms during steep hill climbing use of the vehicle on rough terrain.

3,638,747

WALKING MECHANISM FOR MOVING HEAVY LOADS

Heinz Althoff, Dehme, Germany, assignor to Eisenwerk Weserhutte A. G., Bad Oeynhausen, Germany

Filed Sept. 15, 1969, Ser. No. 857,958
Claims priority, application Germany, Sept. 27, 1968, G 57 51 749; G 67 51 750; G 67 51 752
Int. Cl. B62d *57/02*
U.S. Cl. 180—8 D **5 Claims**



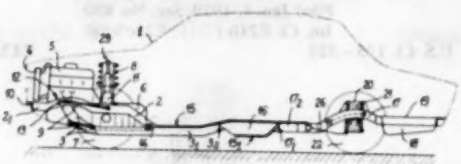
This invention relates to a walking mechanism for moving heavy loads comprising variable length lifting legs and variable-length moving legs articulated to at least one baseplate, each of the moving legs being connected, by means including universally movable articulation means, at one end to a load and at the opposite end to one of the lifting legs at the axis of the latter.

3,638,748

AUTOMOTIVE CHASSIS-FRAME STRUCTURES

Michel Tixier, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt and Automobiles Peugeot, Paris, France

Filed June 15, 1970, Ser. No. 46,035
Claims priority, application France, July 22, 1969, 6924906
Int. Cl. B62d *21/00*
U.S. Cl. 180—64 R **7 Claims**



Chassis-frame structure of automotive vehicle, notably of vehicle having a front power unit and transmission mechanism assembly, with driving front wheels connected through thrust links to the chassis frame, characterized in that it comprises a compound chassis consisting of an assembly of three main elements, that is, a front element constituted by a pair of lower parallel longitudinal members upswept at their front ends, and by a pair of upper longitudinal members each rigidly assembled at two junction nodes with one of said lower longitudinal members so as to double same along a portion corresponding to the cradle of the power unit, transmission and front-wheel assembly by means of an upswept curved portion having an outswept forward extension beyond said lower longitudinal members and their ends assembled by means of a curved horizontal cross member, said lower longitudinal members having rear extensions, the

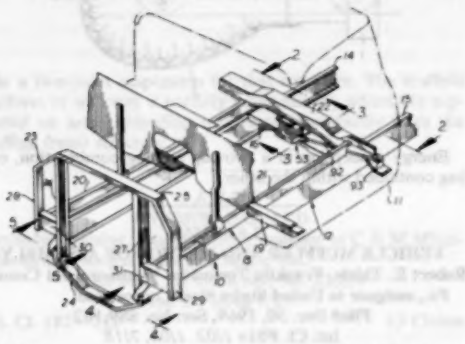
second element consisting of an intermediate chassis member in the form of a steel pressing formed in the conventional fashion with pressed reinforcing ribs and constituting the floor of the passengers' compartment and comprising likewise pressed wells for the feet of the rear seat passengers, and finally a third or rear element consisting of a pair of parallel longitudinal members having a different relative spacing in comparison with said front longitudinal members.

3,638,749

VEHICLE CAB MOUNTING

Stanford G. Graham, Fort Wayne; Ernest R. Sewelin, Waterloo; Richard L. Staadt, Fort Wayne, all of Ind., and Jimmie D. Pinney, Phoenix, Ariz., assignors to International Harvester Company, Chicago, Ill.

Filed Oct. 15, 1969, Ser. No. 866,594
Int. Cl. B60k *11/02*
U.S. Cl. 180—68 12 Claims



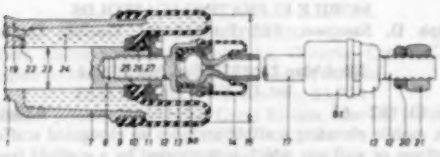
Motor truck body structure and radiator mounting means for resiliently supporting the engine heat exchanger or radiator and the vehicle body structure, which includes an operator's compartment, hood, fenders and radiator grille panel, on the chassis frame whereby such motor truck components and parts are movable in a controlled manner with respect to the chassis frame as a structural composite unit in order to mitigate the transmission of forces, shocks and vibrations thereto. The mounting means includes a subframe to which the aforesaid motor truck parts are directly connected and a single helically wound compression spring and shock absorber assembly for interconnecting the subframe and the chassis frame.

3,638,750

RACK-STEERING MECHANISM WITH HYDRAULIC OR PNEUMATIC STEERING ASSISTANCE, PARTICULARLY FOR MOTOR VEHICLES

Leopold F. Schmid, Leharstrasse 8, 7000 Stuttgart 1, Germany

Filed Mar. 23, 1970, Ser. No. 21,587
Claims priority, application Germany, Apr. 8, 1969, P 19 17 789.0
Int. Cl. B62d *5/10*
U.S. Cl. 180—79.2 R 3 Claims



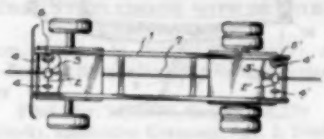
A rack-steering mechanism for a motor vehicle is provided with a hydraulic or pneumatic steering assistance comprising a piston formed by a tubular rolling bellows or diaphragm, one end of which is sealingly connected to the steering gear housing and the other end to the toothed rack extending axially through the steering gear housing. The end of the diaphragm connected to the toothed rack is provided with an annular enlargement through which the toothed rack extends. A ball and socket joint connected by a rack rod with the steering knuckle has a housing with an axial threaded projection thereon which is threadedly connected with one end of the toothed rack and locked thereto by a counternut which at the same time axially compresses the enlargement on the diaphragm and clamps it in sealing engagement with the toothed rack.

3,638,751

APPARATUS FOR AUTOMATICALLY STEERING POWERED VEHICLES

Hans H. Moll, and Werner Hundt, both of Munich, Germany, assignors to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Munich, Germany

Filed Apr. 21, 1969, Ser. No. 817,715
Int. Cl. B62d *1/24*
U.S. Cl. 180—98 4 Claims



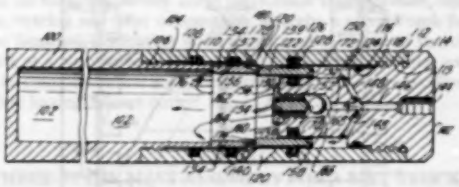
Vehicles steered by signals received from a line placed along a roadway have impulse-receiving means sensitive across the width of the vehicle to signals received from said line.

3,638,752

SEISMIC SIGNAL GENERATOR

Ralph V. Wakefield, Terre Haute, Ind., assignor to Commercial Solvents Corporation, Terre Haute, Ind.

Continuation-in-part of application Ser. No. 755,457, Aug. 26, 1968, now abandoned, Continuation-in-part of application Ser. No. 591,243, Nov. 1, 1966, now abandoned, Continuation-in-part of application Ser. No. 800,332, Jan. 24, 1969, now abandoned, Continuation-in-part of application Ser. No. 639,941, May 15, 1967, now abandoned, Continuation-in-part of application Ser. No. 415,876, Dec. 4, 1964, now abandoned. This application Sept. 13, 1968, Ser. No. 795,368
Int. Cl. G01v *1/00*
U.S. Cl. 181—0.5 R 38 Claims



An assembly for creating pneumatic impulses, e.g., forming a seismic signal comprising a casing including a gas differential pressure system defining a main chamber and a smaller control chamber connected by an orifice, each adapted to contain a high-pressure gas. Impulse producing exhaust ports are provided in the main chamber, gas inlet

means are included for either of the main and control chambers and secondary exhaust means are provided for the control chamber. The differential pressure system includes a slidable element for opening and closing the impulse producing exhaust ports responsive to a force differential across the main and control chambers, the force applied to the slidable element in closed position from the control chamber being greater than that applied from the main chamber, and external valve means for rapidly reducing the control chamber pressure. Different embodiments of the assembly include means for directing the impulse and assemblies wherein high-pressure gas may be continuously fed to the main chamber.

3,638,753

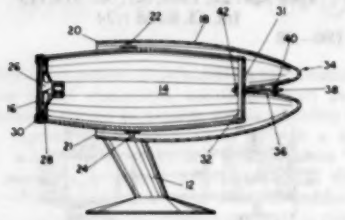
BARREL SPEAKER ENCLOSURE

Paul E. Cunningham, 22 Curtis St., Athens, Ohio

Filed Aug. 31, 1970, Ser. No. 68,199

Int. Cl. G10k *13/00*; **H04r** *1/28*

U.S. Cl. 181—31 B **5 Claims**



A speaker enclosure having a barrel-shaped drum with an open front end and an open rear end. The speaker is axially mounted across the open front of the drum and an aerodynamically curved, dome-shaped reflector is mounted to surround the rear portion of the drum and is spaced therefrom. The open end of the reflector is thus aligned to direct sound emitted from it in a substantially forward axial direction.

3,638,754

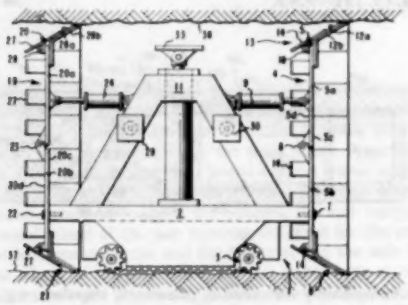
PRESSURE AND SOUND SHIELD FOR BLAST EXCAVATION OF TUNNELS AND THE LIKE

Edward J. Sosnowicz, Colwyn, Pa., and Frank M. Willis, Hedgesville, W. Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 16, 1970, Ser. No. 98,826

Int. Cl. F01n *3/00*; **E21c** *23/00*; **E21f** *5/00*

U.S. Cl. 181—33 R **11 Claims**



An apparatus for attenuating pressure and sound comprising a frame mounted on motion-transmitting means, and a transverse barrier mounted on said frame, said barrier comprising a rigid core and a deformable sealing member completely surrounding the periphery of said core, said sealing member being extensible and retractable with localized radial variability, thereby giving the barrier a variable edge contour.

3,638,755

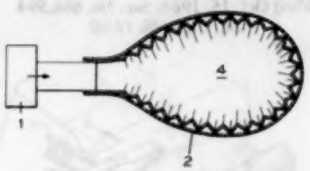
OUTER ENERGY ABSORBER FOR AIR-BAG-RESTRAINT SYSTEM

John J. Sack, Bloomfield Hills, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Dec. 14, 1970, Ser. No. 97,635

Int. Cl. F01n *1/22*; **B60r** *21/02*, *21/08*

U.S. Cl. 181—36 R **7 Claims**



Energy absorption in a two-bag air bag combination, one bag contained within the other.

3,638,756

VEHICLE MUFFLER AND METHOD OF ASSEMBLY

Robert E. Thiele, Franklin Township, Westmoreland County, Pa., assignor to United States Steel Corporation

Filed Dec. 30, 1969, Ser. No. 889,102

Int. Cl. F01n *1/02*, *1/08*, *7/18*

U.S. Cl. 181—57 **8 Claims**

A muffler for vehicles propelled by internal combustion engines. The muffler is formed of two pieces, preferably metal stampings, in which the various chambers and passages are indented or embossed. The two pieces are joined at their peripheral edges. The muffler is tuned by adjusting the relative size and arrangement of chambers and passages. In one modification the position of the pieces may be adjusted relatively to each other to permit variable tuning.

3,638,757

MOBILE ELEVATING SCAFFOLDS

Ralph D. Sampson, 145 Penfield St., Guelph, Ontario, Canada

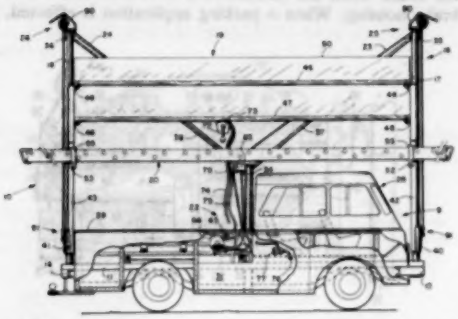
Filed May 22, 1970, Ser. No. 39,614

Int. Cl. E04g *1/18*

U.S. Cl. 182—63 **9 Claims**

A mobile elevating scaffold includes an elongated scaffold platform or walkway which is supported by a scaffold frame structure which can be raised or lowered within a fixed upright frame structure mounted on a truck chassis. Movement of the scaffold frame structure is effected by first and

second cables extending from winch drums mounted on the chassis and over first and second primary cable pulleys and terminally connected to the scaffold frame structure to provide a two-point suspension for that structure. The scaffold platform or walkway is usefully longitudinally adjustably supported on arms extending transversely outwardly from the scaffold frame structure.



3,638,758

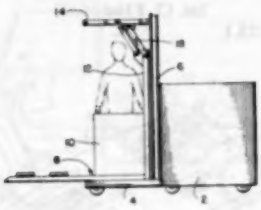
OVERHEAD GUARD

Alexander Weisker, Easton, Conn., assignor to C & M Manufacturing Company, Inc., Bethesda, Md.

Filed Mar. 27, 1970, Ser. No. 23,257

Int. Cl. E04g 1/26

U.S. Cl. 182—112 **13 Claims**



An operator's platform which moves up and down with a carriage on a stacker mast has an overhead guard which is hinged for lowering so that the operator's platform and carriage may be moved close to the roof of a warehouse. The operator moves the guard over to a position where it rests upon the mast. Upward movement of the carriage lowers the guard, and downward movement of the carriage raises the guard to an intermediate position. The operator returns the guard to the protective position. Switches prevent upward movement of the carriage beyond a predetermined mast position when the guard is up and prevent downward movement of the carriage below a predetermined mast position when the guard is inoperative.

3,638,759

METAL LADDERS

Robert Anton Englhardt, Etobicoke, Ontario, Canada, assignor to Indal Canada Limited, Ontario, Canada

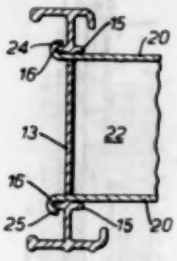
Filed Mar. 30, 1970, Ser. No. 23,738

Claims priority, application Great Britain, Jan. 16, 1970, 2,138/70

Int. Cl. E06c 7/50

U.S. Cl. 182—194 **4 Claims**

A metal ladder, in which each stile has a pair of spaced parallel ribs on its inner and outer faces, and is formed with pairs of slots close to the ribs, and each rung has a cross section in the form of a hollow parallelogram, with two spaced parallel tabs projecting at each end. The tabs are inserted through the slots and crimped over the outer ribs, and the sidewalls of the rungs locate against the ribs on the inwardly facing surfaces of the stiles.



3,638,760

OIL TANK FOR A ROTARY PISTON INTERNAL COMBUSTION ENGINE WITH DRY-SUMP LUBRICATION

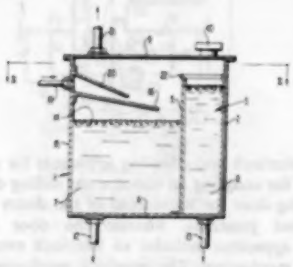
Heinz Lamm, Esslingen-St. Bernhardt, Germany, assignor to Baimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Mar. 31, 1970, Ser. No. 24,279

Claims priority, application Germany, Apr. 2, 1969, P 19 16 967.6

Int. Cl. F16n 39/00

U.S. Cl. 184—6.23 **18 Claims**



An oil tank for a rotary piston internal combustion engine, especially of trochoidal type of construction, with a dry sump lubrication for the drive unit and with a metered fresh oil lubrication for the piston cam surface in the housing casing; the oil tank for the dry sump lubrication includes inlet, outlet, venting and filler connections whereby a second tank for the fresh oil lubrication is arranged on the inside of the oil tank at a place substantially directly below the filler inlet and is in communication with the oil tank by way of an overflow while having its own outlet.

3,638,761

THREE-STAGE MAST ASSEMBLY FOR A LIFT TRUCK

Shuji Ohta, Toyohashi, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi Prefecture, Japan

Filed Feb. 11, 1970, Ser. No. 10,481

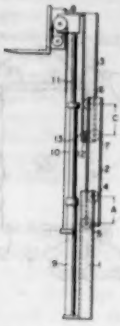
Claims priority, application Japan, Feb. 25, 1969, 44/14404

Int. Cl. B66b 9/20

U.S. Cl. 187—9 **2 Claims**

A three-stage mast assembly for a lift truck, consisting of an outer mast channel, an intermediate mast channel and an inner mast channel, all of I- or L-shaped cross section,

wherein the forward and rearward flanges, respectively, of the intermediate mast channel are arranged rearwardly from



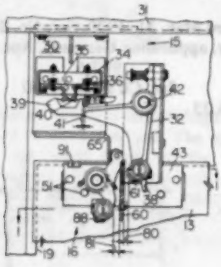
the forward and rearward flanges, respectively, of the outer and inner mast channels.

3,638,762

DOOR-COUPLING APPARATUS FOR ELEVATORS

Calvin Edward Johns, Tucker, Ga., assignor to Otis Elevator Company, New York, N.Y.

Filed Aug. 11, 1969, Ser. No. 848,981
Int. Cl. B66d 13/16
U.S. Cl. 187—52 8 Claims



Door interlock and coupling apparatus for an elevator installation for coupling an elevator car sliding door to a hoistway sliding door for movement of the doors between open and closed positions, wherein the door interlock and coupling apparatus includes an interlock mechanism and a coupling mechanism. The interlock mechanism has a catch portion fixedly mounted adjacent to the hoistway door and has a locking lever pivotally mounted on the hoistway door for locking the hoistway door in its closed position. The coupling mechanism includes a vane and a magnetized roller assembly, wherein the vane is composed of a magnetic material and is mounted on the car door, and wherein the magnetized roller assembly is supported by the locking lever and is operative to apply a magnetic force on the vane for coupling the vane and the car door to the hoistway door for movement of the coupled doors between the open position and the closed position until the locking lever operates to lock the hoistway door in its closed position.

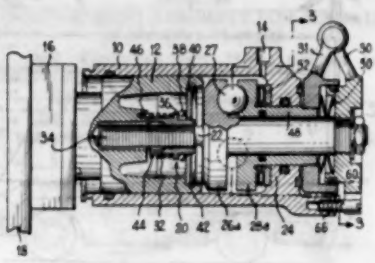
3,638,763

MECHANICAL ACTUATING MECHANISM FOR DISC BRAKE

Bernard Laverdant, Vincennes, France, assignor to Societe Anonyme D.B.A.

Filed Apr. 22, 1970, Ser. No. 30,726
Claims priority, application France, Apr. 22, 1969, 6912597
Int. Cl. F16d 55/26
U.S. Cl. 188—72.6 4 Claims

A parking actuator for a disc brake is disclosed which includes a pair of relatively rotatable actuating members. Oppositely facing recesses having inclined sides are provided in each of the members, and force-transmitting elements are received in these recesses. One of the members carries a nut which advances into engagement with the actuating piston of the brake when the one member is rotated relative to the brake housing. When a parking application is effected, the



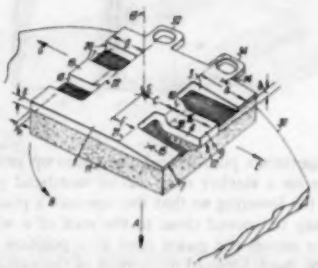
one member is first rotated relative to the housing to move the nut into engagement with the piston, whereupon the other member is rotated relative to the one member to drive the force-transmitting elements up the sides of the recesses to urge the one member and the piston in a brake-applying direction.

3,638,764

BRAKESHOE FOR SPOT-TYPE DISC BRAKES

Hans Joachim Anders, Frankfurt, am Main, Germany assignor to International Telephone and Telegraph Corporation, New York

Filed Apr. 23, 1970, Ser. No. 31,274
Claims priority, application Germany, Apr. 23, 1969, P 19 20 582.4
Int. Cl. F16d 66/02
U.S. Cl. 188—73.1 4 Claims



A spot-type disc brakeshoe having a brake lining and a backing plate with the backing plate having lateral lugs, at least one of which is bent toward the brake disc while the others are chamfered to form an acute angle with respect to the actuator piston whereby the brakeshoe will rotate thereby creating an audible signal when the brake lining is worn down and the bent lug contacts the brake disc.

3,638,765

DISC BRAKE WITH NOISE ARRESTER

Bernard M. Flaherty, Birmingham, and Lewis L. Knight, Allen Park, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 18, 1970, Ser. No. 20,692
Int. Cl. F16d 65/00
U.S. Cl. 188—73.5 7 Claims

A disc brake including a noise arrester means that dampens vibrations between the brake pad backing plate and the

caliper assembly. The noise arrester comprises a spring metal clip that engages the end of the backing plate and exerts a

spring force on an abutment tab protruding from the backside of the brake pad backing plate.

3,638,766

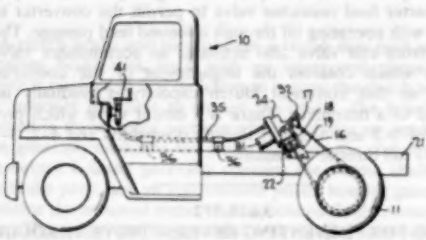
MANUAL CONTROL FOR AUXILIARY BRAKE DEVICE

Kirk Besoyan, Blythe, Calif., assignor to Safety Vee Brake, Inc., Blythe, Calif.

Filed July 10, 1970, Ser. No. 53,795

Int. Cl. F16d *65/34*

U.S. Cl. 188—106 P **8 Claims**



An auxiliary brake device comprising a continuous flexible cable extending about a pair of sheaves secured to opposite ends of a vehicle axle, friction elements carried by the cable and engaging the sheave walls for braking the vehicle as the cable is drawn tight, a manual control means for optionally operating an automatic control to actuate the cable for applying the brake in the event of automatic control failure.

3,638,767

MECHANICAL DELAY DEVICE

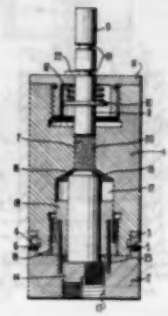
Fritz Elsner, Sieglar; Franz Becker, Bonn, and Heinreich Kolf, Troisdorf, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Continuation of application Ser. No. 744,095, July 11, 1968, now abandoned. This application Feb. 19, 1970, Ser. No. 11,936

Int. Cl. F16f *9/30*

U.S. Cl. 188—268 **8 Claims**

A mechanical delay device provided with a throttle passage between two sealed chambers, with a piston in one chamber to displace a plastically deformable flowable mass from the one chamber to the second chamber. A pin extends through the second chamber to adjust the throttle passage and to surround it with a reset piston movable in the second



annular chamber by relative rotation of two housing parts to move the flowable mass back into the first chamber.

3,638,768

HYDROSTATIC BRAKE

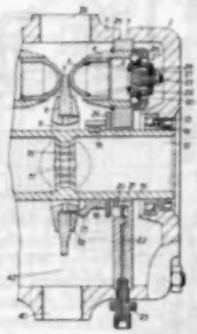
Fritz Ostwald, Buchschlag, Germany, assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 26, 1970, Ser. No. 22,853

Claims priority, application Germany, Mar. 29, 1969, P 19 16 333.8

Int. Cl. F16d *57/06*

U.S. Cl. 188—294 **8 Claims**



A hydrostatic brake having a swashplate which actuates a series of circularly spaced pistons movable in cylinders having energy dissipating suction and discharge valves. The angle of the swashplate is variable in response to a brake signal to increase the stroke of the pistons and thereby the load on the shaft rotating the swashplate.

3,638,769

DASHPOT ASSEMBLY

Arthur M. Cohen, Westport, Conn., assignor to Airpot Corporation, Norwalk, Conn.

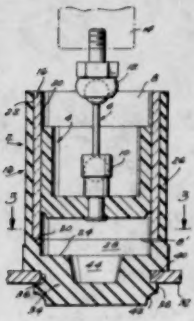
Filed Sept. 15, 1969, Ser. No. 857,697

Int. Cl. F16f *9/54*

U.S. Cl. 188—298 **17 Claims**

The cylinder of a dashpot is formed from an accurately dimensioned rigid tube which is received within a soft plastic

sheath, the latter surrounding the sidewalls of the tube and also closing the end of that tube. The sheath is preferably



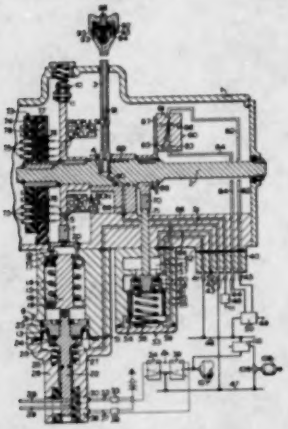
provided with a downwardly extending part which facilitates the mounting of the assembly on an appropriate support.

3,638,770

BRAKE AND PROPULSION CONTROLLER

Richard K. Frill, Pittsburgh, and Michael T. Zoric, North Versailles, both of Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Oct. 6, 1969, Ser. No. 863,951
Int. Cl. F16d 67/02
U.S. Cl. 192—2 7 Claims



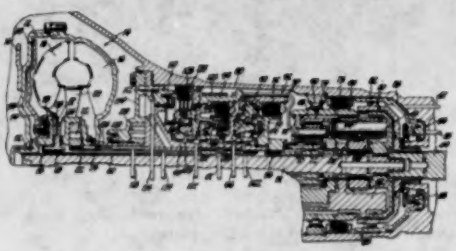
An improved railway vehicle operator's brake and propulsion controller combining the use of fluidic devices and light-responsive devices with fluid pressure responsive devices for controlling braking as well as propulsion functions of the vehicle, such arrangement thus providing a compact controller requiring less space than present controllers when installed. Operation of the several devices is effected by a manually rotatable shaft having rotary cams arranged thereon for operating certain ones of the devices and which also carries perforated disc members by which light-responsive elements are selectively exposed to or shielded from a light source, depending upon the angular position of the respective disc members to thereby control closing or opening of respective electrical control circuits.

3,638,771

AUTOMATIC TRANSMISSION AND CONTROLS

Howard E. Chana, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of application Ser. No. 880,779, Nov. 28, 1969. This application July 30, 1970, Ser. No. 59,467
Int. Cl. F16d 67/00; F02d 11/02; B60k 17/02
U.S. Cl. 192—3.33 12 Claims



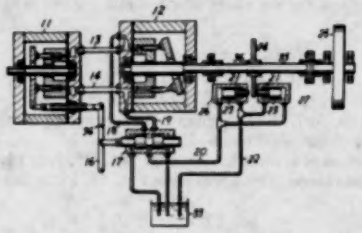
Power transmission having torque converter drivingly connected to a planetary gear unit conditionable by selective engagement of friction drive establishing devices to provide for four forward drives and one reverse drive. A converter clutch normally held from engagement by the feed of fluid into the converter through a clutch control chamber can be engaged by converter pressure in response to an upshift signal and subsequent exhaust of fluid from the control chamber to permit mechanical drive of the gear unit. A shift valve forming part of hydraulic controls provides a signal pressure to open a converter feed restrictor valve to permit the converter to be fed with operating oil through a second feed passage. The signal from this valve also activates an accumulator valve system which controls the engagement of the converter clutch so that converter clutch capacity is gradually increased to a maximum. There is a detent valve which provides for 3–2 and 4–3 part throttle downshifts and 4–2, 3–2 and 2–1 full throttle downshifts.

3,638,772

MEANS FOR PREVENTING REVERSE DRIVE THROUGH A HYDROSTATIC TRANSMISSION

Kenji Ninomiya, Kawasaki-shi, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho (Komatsu Ltd.), Akasaka, Tokyo, Japan

Filed Nov. 6, 1969, Ser. No. 874,644
Claims priority, application Japan, Dec. 27, 1968, 43/95521
Int. Cl. F16d 67/00; B60k 29/00, 21/00
U.S. Cl. 192—4 B 3 Claims



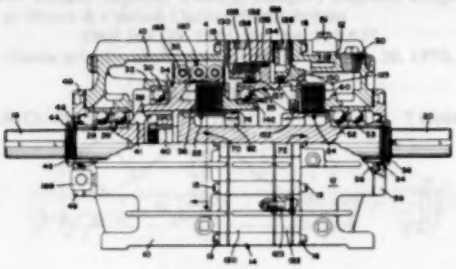
A means for automatically preventing a motor, which is hydraulically driven by a pump and mechanically drives an

inertial load from a pumping action of the motor caused by being driven by said inertial load, comprising blocking a reverse power transmission. The blocking may be done by brake disc fixed to a transmission shaft or by declutching a pair of clutching members arranged across the shaft. The automatic actuation of the blocking action may be either mechanically or electrically effected.

3,638,773
CLUTCH BRAKE UNIT

William E. Lewis, Fairfield, and Dennis Dobrinich, Cincinnati, both of Ohio, assignors to Force Control Industries, Inc., Fairfield, Ohio

Filed Mar. 31, 1970, Ser. No. 24,191
Int. Cl. F16d *11/06*
U.S. Cl. 192—18 A **9 Claims**



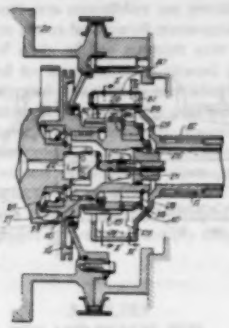
A clutch-brake unit incorporates a clutch disk pack, and a separate brake disk pack with an interposed piston unit which is coupled in one direction to engage the clutch and in the opposite direction to engage the brake. The housing is formed in three major sections which includes an input section generally enclosing the input shaft and the clutch pack. An output housing generally contains the output shaft and the brake pack, and an intermediate piston housing generally contains the actuated piston and associated fluid pressure inputs. The output shaft is provided with integral impellers and oil access apertures for delivering a constant supply of oil to the clutch and brake packs and for providing an inlet in which the oil may flow by centrifugal force when the output shaft is not turning. A heat exchanger consists of a heat exchange subassembly forming a series of finned tubes which assembly may be inserted in surrounding relation to the clutch pack. A shrouded fan assembly may be substituted where thermal capacity does not require internal cooling.

3,638,774
PAWL AND RATCHET CLUTCH

Darrel W. Burch, and Arthur H. Jacomet, both of Phoenix, Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed May 6, 1970, Ser. No. 34,955
Int. Cl. F16d *13/04*
U.S. Cl. 192—42 **14 Claims**

A pawl and ratchet clutch for use between a starter and a gas turbine engine in which the pawls of the clutch are held in engagement with ratchet teeth by both resilient and centrifugal force, during the engine starting operation. After self-sustaining engine speed is attained, the pawls are disengaged and held in such condition, also by centrifugal force, during engine operation. When engine operation is discontinued and its speed is reduced sufficiently, the pawls will be resiliently urged toward the ratchet teeth and a light ratcheting will occur. If the starter is energized during engine coastdown, the pawls may be moved into engagement with the ratchet teeth

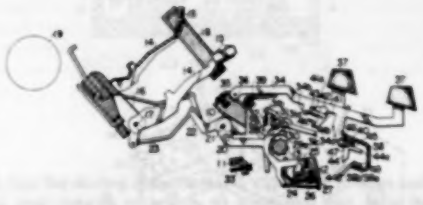


by centrifugally responsive actuating means in addition to the resilient force.

3,638,775
REPEAT ACTION MECHANISM FOR POWER-OPERATED TYPEWRITERS

Yukio Hishida; Takami Kato, and Hisao Kurachi, all of Nagaya, Japan, assignors to Brother Industries Ltd., Nagaya, Japan

Filed Jan. 8, 1969, Ser. No. 789,776
Int. Cl. B41j *23/08*
U.S. Cl. 197—17 **5 Claims**



A repeat action mechanism for operating a type bar having a part operatively connected to said type bar, a control lever pivotally mounted on a key lever depressible to first and second positions, the control lever including a first portion for initiating a transitory connection with said part and a power roll upon depression of the key lever thereby to begin operating said type bar, and a second portion for repeatedly causing said transitory connection upon depression of the key lever to the second position. The second position is adjustable independently of the first position.

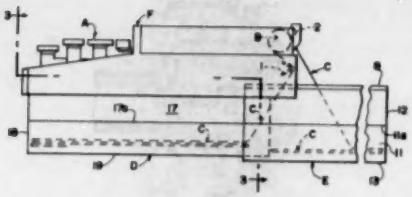
3,638,776
STENOGRAPHIC MACHINE WITH COLLAPSIBLE PAPER WEB HOLDERS

Ben C. Ridge, 2107 Sir Francis Drake Blvd., Fairfax, Calif.

Filed June 30, 1969, Ser. No. 837,426
Int. Cl. B41j *29/02*
U.S. Cl. 197—186 A **2 Claims**

A stenographic machine with collapsible paper web holders that reduces the overall height of the secretarial machine by about 1⅛ inches and reduces the height of the court reporter model by about 2½ to 3 inches. This permits the improved stenographic machine to be carried in a casing of considerably less width than is now possible with the stan-

dard stenographic machine. Novel means is provided for mounting the improved stenographic machine on a tripod support, the actual connection between the machine and the



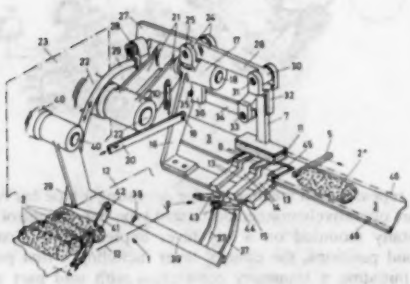
support being made at one side of the collapsible paper web holders so as not to interfere with these holders when they are enlarged for holding the paper web.

3,638,777

METHOD AND DEVICE FOR SEPARATING ARTICLES ARRANGED IN CLOSE SUCCESSION ON A CONVEYOR

Rene Fluck, Neuhausen am Rheinfall, Switzerland, assignor to Schwerzerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed May 4, 1970, Ser. No. 34,075
Claims priority, application Switzerland, May 8, 1969, 7029/69
Int. Cl. B65g *47/00*
U.S. Cl. 198—20 8 Claims



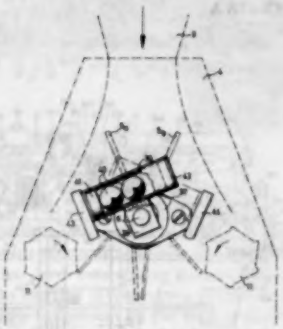
A method and device for separating closely successive articles which are fed by an input conveyor toward a packaging machine. Each article reaching the end of the input conveyor is transferred to a movable bottom member lying initially flush with the conveyor. A first vertically movable holding post holds the last article on the end of the conveyor while a second holding post engages the preceding article on the bottom member and when the latter is tilted with the second holding post and the article therebetween the two mentioned articles, which may stick together, are separated along an axis forming the line of contact between said articles. The preceding article is then transferred from the bottom member to a lower disposed stationary slide track extending at a right angle to the input conveyor. The second holding post releases the article which then is moved by a tappet along the slide track to a packaging machine.

3,638,778

APPARATUS FOR SWITCHING OBJECTS BETWEEN TWO PATHS

Franz Remensperger, St. Georgen, Black Forest, Germany, assignor to Fr. Winkler Kg. Spezialfabrik fuer Baeckereimaschinen und Backoefen, Villingen, Black Forest, Germany

Filed Feb. 13, 1970, Ser. No. 11,234
Claims priority, application Germany, Oct. 17, 1969, G 69 40 463
Int. Cl. B65g *47/26*
U.S. Cl. 198—31 AC 9 Claims



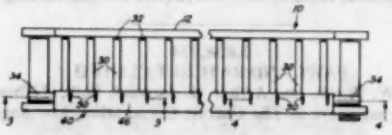
Successive pieces of dough are fed to a mechanical distributing switch which is shifted by alternate pieces between two end positions for guiding the pieces alternatingly between two different paths. Dead-center-arresting means including a movable weight, hold the distributing switch in either end position until the same is shifted by the next following piece to and beyond a dead center position and assumes the respective other end position.

3,638,779

CONVEYOR

Carl J. Milazzo, Tonawanda, N.Y., assignor to Hohl Machine & Conveyor Co., Inc., Buffalo, N.Y.

Filed June 27, 1969, Ser. No. 837,118
Int. Cl. B65g *13/02*
U.S. Cl. 198—127 7 Claims



An accumulating transfer conveyor comprising a series of live rollers driven by an endless drive member having one side in frictional contact with said rollers adjacent one end thereof. A pair of pads are secured to the other side of the endless drive member at equally spaced-apart distances. As the pads move along with the drive member, they engage detent means which snub the pads and the underlying drive member radially against the rollers to increase the frictional contact between the endless drive member and the rollers.

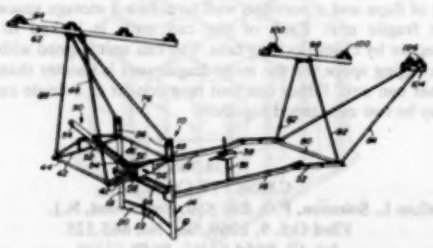
3,638,780
CONVEYOR SYSTEM
Clarence P. Snow, 868 E. Snedden Drive, Sandy, Utah
Filed May 14, 1970, Ser. No. 37,164
Int. Cl. B61b 11/00; B65g 17/20
U.S. Cl. 198—130 15 Claims

A conveyor system which includes an endless conveyor link supported above ground level with spaced supports; at least one support bracket affixed to the link to extend outwardly away from one side thereof and the downwardly below the link; turning means coacting with the link for changing its direction of travel away from the one side of the link; turning means coacting with the link for changing its direction of travel towards the opposite side of the link; and drive means coacting with the link for longitudinally propelling it.

3,638,781
CONVEYOR BELT-TENSIONING MEANS
Peter Donald Heywood Comley, Glasgow, England, assignor to Movor & Coulson Limited, Great Britain
Filed Jan. 29, 1971, Ser. No. 110,827
Claims priority, application Great Britain, Jan. 30, 1970, 04,525/70
Int. Cl. B65g 15/30
U.S. Cl. 198—208 7 Claims

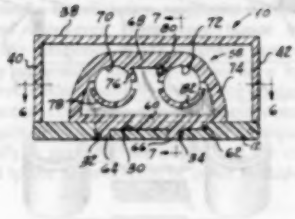
An endless conveyor has belt-tensioning means comprising two devices adapted and arranged to sense and signal variations in the tensions in the working and return runs of the belt respectively due to change of load conditions, a drum around which the return run of the belt passes and which is displacable so as to vary the tensions in the belt, speed-variable driving gear adapted to effect said displacement of the drum, and means adapted to effect actuation of said driving gear in response to signals emitted by said devices when said tensions are not at a predetermined ratio, and to effect variation in the speed of said gear, and hence of the displacement of the drum, in accordance with the signal characteristics which vary in accordance with the rate at which tension change in the belt takes place due to variation in load conditions.

3,638,782
TRACTOR MOUNTED GRAIN AUGER
Sidney S. Cotton, Box 386, and Richard A. Cotton, P.O. Box 502, both of Glasgow, Mont.
Filed June 29, 1970, Ser. No. 50,859
Int. Cl. B65g 41/00
U.S. Cl. 198—233 6 Claims



A mobile grain elevator including an elongated auger conveyor assembly disposed above and extending lengthwise of a mobile support having front and rear ends. The mobile support includes front and rear lift arm assemblies having free ends swingable through upright planes extending longitudinally of the mobile support and to which one pair of ends of a pair of support arm assemblies are pivotally secured for relative oscillation about horizontal transverse axes. Further, the other pair of ends of the support arm assemblies are pivotally attached to longitudinally spaced portions of the conveyor assembly and structure is provided to control relative oscillation between one of the lift arm assemblies and the corresponding support arm, whereby uncontrolled longitudinal shifting of the conveyor assembly relative to the lift arm assemblies is prevented. Also, the mobile support is provided with means for selectively swinging both the front and rear lift arm assemblies relative thereto whereby the front and rear ends of the auger conveyor assembly may be adjusted in elevation.

3,638,783
PEN AND PENCIL BOX
Richard K. Enseki, Glen Rock, and Michael P. Arnone, North Bergen, both of N.J., assignors to Kreisler Manufacturing Corporation, North Bergen, N.J.
Filed Jan. 7, 1970, Ser. No. 1,249
Int. Cl. B65d 25/10, 25/54
U.S. Cl. 206—45.14 1 Claim



A box for storing and displaying elongated articles such as pens and pencils in which an elongated flat base has a laterally extending recess in its upper surface provided with eccentrically positioned spaced holes for receiving locating pins on an article holder boss adapted to mate with the recess so as correctly to orient the article tips with relation to the box. The holder is formed with one or more resilient sockets tapered in the direction toward which the article tips are to be oriented. A transparent cover pivoted on the base includes means for receiving snap-locking bosses on the base when the cover is closed.

3,638,784
TWO COMPARTMENT UNITARY BAG
William A. Bodolay, 15 Fern Glen Road, East Longmeadow, Mass., and Stephen M. Bodolay, 15 Daviston St., Springfield, Mass.
Continuation-in-part of application Ser. No. 743,140, July 8, 1968, now Patent No. 3,540,183. This application June 4, 1970, Ser. No. 43,335
Int. Cl. B65d 25/00
U.S. Cl. 206—45.34 7 Claims

A bag is formed having a double fold of transparent material so that there are two separate compartments. The header label may be inserted between two of the layers and the material may be inserted between the double layer and a single layer or this procedure may be reversed as desired.

The bag that is formed is a two compartment bag. The bag

is especially designed for use with hardware items, such as safety pins, bolts, screws, nuts, etc. In one compartment is

the advertising media and in the compartment opposite this compartment are the hardware items or the like.

3,638,785

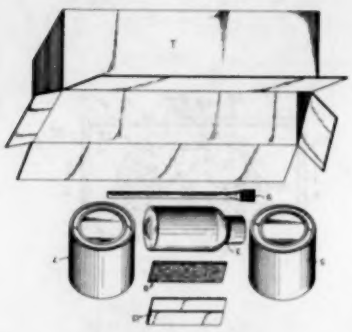
KIT FOR MODIFYING FOOTWEAR TRACTION

Charles P. Casteel, 719 Grand Ave., and Roy E. Vanderhoof, Box 490, both of Glenwood Springs, Colo.

Filed Apr. 7, 1970, Ser. No. 26,289

Int. Cl. B65d *81/32, 85/00*

U.S. Cl. 206—47 R **9 Claims**



A kit and process for applying a highly slip resistant surface to the soles and heels of ordinary footwear of a great many types including fishing boots and shoes used for boating. The kit includes a quantity of very hard grit particles, an elastic cement, a substance to remove resinous impregnants from the surface of soles, and ordinary sandpaper. In use, the soles of conventional footwear are cleaned and roughened with the sandpaper, the surface is treated with a resin removing substance, and then treated with a chlorine bleach. Then the adhesive is applied. The grit is applied on that adhesive and covered with another layer of the adhesive. For soles of felt and the like a prime coat is first applied and dried before applying the coat for the grit. The so treated soles give a very sure and safe grip on a wide variety of different surfaces, and are comparatively resistant to wear and deterioration.

3,638,786

PACKAGE FOR PREPARATION AND DISPENSING OF HEATED FOAM

William Joseph Borecki, and Frederick John Gradishar, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 12, 1969, Ser. No. 875,649

Int. Cl. C09k *3/30;* **A61k** *7/14*

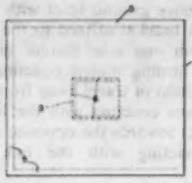
U.S. Cl. 206—47 A **5 Claims**

A package adapted for preparing and dispensing heated foam, which comprises a manually openable sealed outer container and a manually rupturable sealed inner container, said package containing

A. an aqueous dispersion of a foamable composition,

B. hydrogen peroxide,

C. a reductant composition,



D. an organic propellant selected from

a. 1,2-Dichlorohexafluoropropane

b. 1,2-Dichloro-1,2,2-trifluoroethane

c. Perfluorodimethylcyclobutane

d. 1,2-Dichloroperfluorocyclobutane

wherein materials (B) and (C) are isolated from each other in the separate containers of said package.

3,638,787

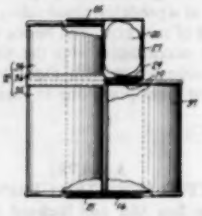
PACKAGE FOR HOLDING TWO CAN UNITS AND A MORE FRAGILE UNIT AND BLANK FOR MAKING SAME

Floyd L. Phillips, Jr., Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed July 7, 1970, Ser. No. 52,976

Int. Cl. B65d *65/24, 5/48, 5/54*

U.S. Cl. 206—47 R **6 Claims**



A package for holding two chime-ended can units with a more fragile unit, comprising a wrapper extending longitudinally around the can units and provided at one end with a set of flaps and a partition wall to define a storage space for the fragile unit. Each of the can units is locked in the wrapper by chime-locking tabs. The can unit aligned with the packaging space for the more fragile unit is shorter than the other can unit. Either can unit may consist of a single can or may be two cans taped together.

3,638,788

CASSETTE COVER

Nathan L. Solomon, P.O. Box 550, Englewood, N.J.

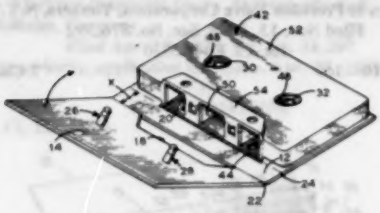
Filed Oct. 9, 1969, Ser. No. 865,125

Int. Cl. B65d *85/67;* **B65h** *55/00*

U.S. Cl. 206—52 R **6 Claims**

A sheet of material which can be bent to enclose a tape cassette, engaging means coupled to the material, and, if

desired, positioned to pass through the centers of the tape spools of the cassette to lock the bent material to the cassette



to form an enclosure. The sheet of material can be composed of plastic and molded having lines of reduced thickness which provide bending of the plastic along defined lines.

3,638,789

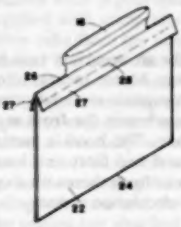
DISPOSABLE FINGER PROTECTING CLEANSING MITT

Marian Stanislak Tuszewski, 915 49th Ave. S.W., Calgary, Alberta, Canada

Filed Jan. 26, 1970, Ser. No. 5,590

Int. Cl. A47k *7/03*; **A61b** *19/02*

U.S. Cl. 206—63.2 R **10 Claims**



A mitt or glove is provided with a sponge or pad on one face thereof and is detachably sealed within an envelope in a sterile condition. The finger engaging cuff of the mitt extends from the envelope so that the mitt can be engaged over the finger of the user wherefrom the protective envelope can be peeled back and removed.

3,638,790

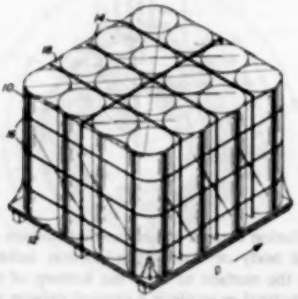
PALLETIZED PACKAGING OF CYLINDRICAL OBJECTS

Richard O. Schmid, East Brunswick, and Harold Aida, Colonia, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,673

Int. Cl. B65d *71/04*, *85/62*

U.S. Cl. 206—65 S **37 Claims**



Cylindrical objects, particularly end-capped rolls of sheeting and the like, are loaded on a pallet in the vertical position and bound into a stable unit by horizontal strapping and baffles placed between rows of the cylindrical objects. The stabilized unitized group of cylindrical objects is secured to a pallet by strapping or by a heat-shrunk plastic shroud covering and protecting the cylinder, or by both.

3,638,791

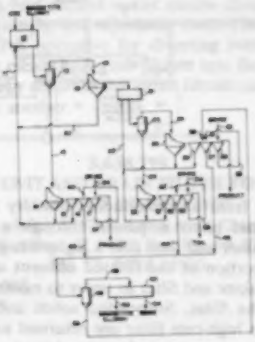
METHOD FOR TREATMENT OF HEAVY MEDIA

Marvin H. Harrison, Carlsbad, N. Mex., assignor to International Minerals & Chemical Corporation

Filed Apr. 13, 1970, Ser. No. 27,811

Int. Cl. B03b *9/00*

U.S. Cl. 209—12 **8 Claims**



In heavy media beneficiation magnetite is rinsed from ore fractions and recovered from rinse liquor by magnetic separators. The efficiency of the magnetic separation step is improved by separating the wash liquor in a hydrocyclone into a first fraction substantially free of ore contaminants and a second fraction containing most of the ore contaminants in the wash liquor. The contaminant-free wash liquor is treated conventionally in magnetic separators and the contaminants are recycled to the rinse screens or other suitable separation device.

3,638,792

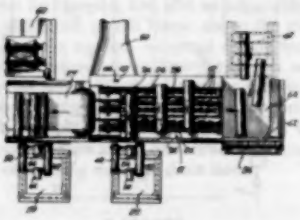
GRINDER-FEEDING SYSTEM

Georges A. Bilocq, Plessisville, Quebec, Canada, assignor to Forano Limited, Plessisville, Quebec, Canada

Filed Dec. 24, 1970, Ser. No. 101,365

Int. Cl. B65g *47/22*, *47/18*; **B01d** *37/00*

U.S. Cl. 209—73 **13 Claims**



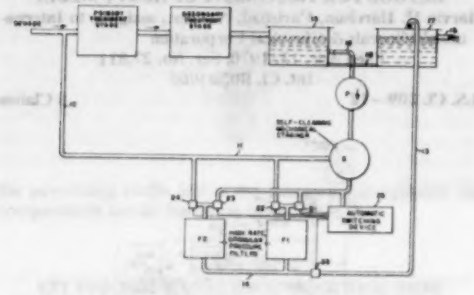
A grinder-feeding system including a log aligning device comprising a log-feeding box adapted to receive logs, and a conveyor including at least two power-driven upwardly sloping chains carrying a plurality of transverse cross pieces for receiving the logs from the feeding box and aligning such logs as they are moved up the slope by the chains. A butting wall is mounted parallel to the chains and on one side of the conveyor, and spiral rolls synchronized with the chains are mounted between each pair of chains for pushing the logs against the butting wall.

3,638,793

SEWAGE TREATMENT SYSTEM

Lawrence J. Peck, 4 Barney Road, Elnora, N.Y.

Filed Sept. 22, 1969, Ser. No. 859,676
Int. Cl. B01d 37/04
U.S. Cl. 210—73 10 Claims



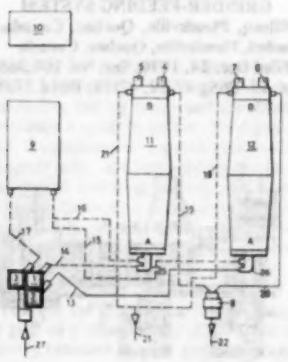
The effluent from a conventional primary or secondary sewage treatment plant is passed through a self-cleaning mechanical strainer and then into a high-rate, granular, pressure filter. A portion of the filtered effluent is recirculated through the strainer and filter in order to maintain a uniform flow rate on the filter. Suspended solids collected by the strainer and the high-rate filter are returned to the entrance of the primary treatment area for retreatment.

3,638,794

WATER SOFTENER

Walter Holzer, Meersburg, Germany, assignor to Holzer Patent AG, Zug, Switzerland

Filed Sept. 4, 1969, Ser. No. 855,335
Claims priority, application Germany, Sept. 5, 1968, P 17 92 469.5
Int. Cl. B01d 35/12
U.S. Cl. 210—98 2 Claims



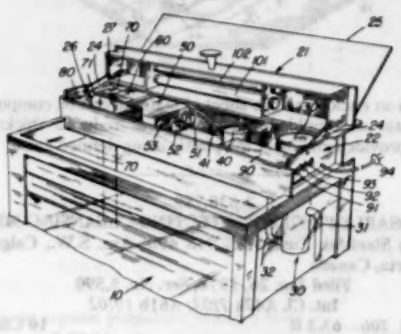
A water softener having two equal sized ion exchangers programmed with a regenerating unit so that one ion exchanger is regenerating while the other ion exchanger provides soft water. The two ion exchangers being so dimensioned that the time for the maximum production of soft water of one ion exchanger corresponds exactly to the time which is required to regenerate the other ion exchanger. The outlet of the regenerating unit is connected to each ion exchanger to give impulses to a program control unit to control the cycling of the water softener.

3,638,795

POWER HOOD

Henry A. Feddern, and John A. Sabol, both of Miami, Fla., assignors to Precision Valve Corporation, Yonkers, N.Y.

Filed Nov. 13, 1969, Ser. No. 876,392
Int. Cl. E04h 3/20
U.S. Cl. 210—169 7 Claims



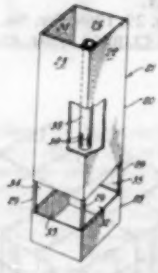
A covering hood for an aquarium tank incorporates water and air pumps, a filter, heater means, ultraviolet irradiation means, lights and an organic-material-removal device into a two-section structure wherein the front section is hinged for access to the aquarium. The hood is particularly adapted to cooperate with a gravel bed filter unit located near the bottom of the aquarium to form therewith a complete aquarium water treatment and circulation system.

3,638,796

APPARATUS FOR PREVENTING OIL POLLUTION

Ray Tuggle; Richard H. Graves, both of Houston, Tex., and Ray J. De Rouen, New Iberia, La., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 31, 1968, Ser. No. 816,876
Int. Cl. B01d 21/24
U.S. Cl. 210—170 5 Claims



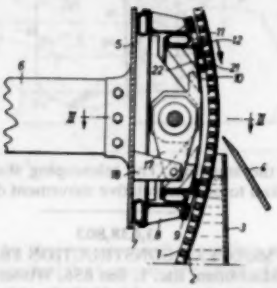
An oil pollution control apparatus that isolates a portion of a substantial body of water. The portion isolated extends from above the surface to near the bottom of the body of water. A structural example is a vertical caisson with its base extending into the bottom of the body of water and with openings just above that bottom to permit circulation of the water at that level.

3,638,797

NONCELLULAR ROTARY VACUUM FILTER

Wolfgang Heckmann, Bergisch-Gladbach, Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne-Mulheim, Germany

Filed Apr. 23, 1970, Ser. No. 31,207
Claims priority, application Germany, Apr. 29, 1969, P 19 21 717.5
Int. Cl. B01d 33/06
U.S. Cl. 210—393 9 Claims



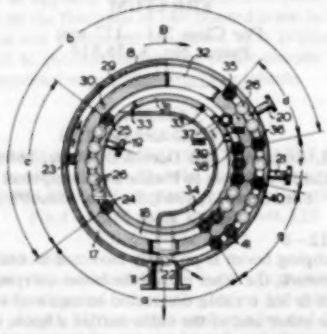
A noncellular vacuum filter is provided in its interior with a blast chamber supplied with compressed air which is used for removing the filter cake from the outer circumference of a cylindrical filter drum. The blast chamber is formed by two telescoping sealing frames, both of which carry each a continuous flexible sealing bar extending all around the frames and which are adapted to engage the inner wall of the filter drum when the frames are radially moved outwardly by eccentrics on an eccentric shaft mounted in bearings carried by a baseplate closing the outer sealing frame opposite the side which has said sealing bar mounted thereon. A slot in the upper portion of the sealing bar attached to the inner sealing frame is in communication with apertures in said inner sealing frame so that compressed air from the blasting chamber is jetlike discharged and directed through the wall of the filter drum to remove the filter cake from the outer face of said drum.

3,638,798

FILTER STRUCTURE

Klaus Basfeld, and Heinrich Schreiber, both of Grevenbroich, Germany, assignors to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft, Grevenbroich, Germany

Filed Sept. 26, 1969, Ser. No. 863,417
Claims priority, application Germany, Sept. 18, 1968, P 17 86 325.1
Int. Cl. B01d 33/06
U.S. Cl. 210—404 12 Claims



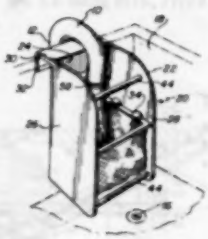
A rotatable filter drum has a plurality of internal filter cells which orbit about the axis of rotation of the drum in an endless path in which they are alternately immersed into and emerge from a bath of liquid to be filtered. Suction means communicates with the cells for drawing liquid in form of the initial filtrate into the cells when the same are immersed, with concomitant buildup of a filter cake on the exterior of the drum in the area of the respective cells. Dispensing means dispenses a wash solution onto the cells when the same are emerged from the bath so that the wash solution penetrates the filter cake and enters into the cells as a wash filtrate. A leading and a trailing conduit communicate with each of the cells in the respective leading and trailing regions thereof for evacuating the initial and wash filtrate therefrom. Control valve means defines two concentric annular interior channels one of which communicates with the leading conduits and the other of which communicates with the trailing conduits. First and second outlet means communicate with both of the channels, and adjustable control means in the annular channels is operative for diverting initial filtrate into the first outlet means and wash filtrate into the second outlet means to thereby separate the initial filtrate and the wash filtrate from one another.

3,638,799

CLAMPING UNIT AND DRAIN FILTER FOR WASHING MACHINE DRAIN LINES

Gilbert J. Serowiecki, 5552 N. Luna Ave., Chicago, Ill.

Filed Sept. 3, 1970, Ser. No. 69,371
Int. Cl. B01d 23/00
U.S. Cl. 210—462 5 Claims



A clamping unit and drain filter for washing machine drain lines including a three-walled frame, a bracket for detachably mounting the frame to a laundry tray, a filter basket with a screen element for trapping lint, and an adjustable clamp for securing the drain line to the frame above the filter basket, including a concave support mounted to the frame with a backface and a concave front face forming a seat for the drain line and an adjustable ring clamp for securing the drain line to the concave support. The concave support includes a narrow width clamping portion at the top and a relatively wider width seat portion at the bottom so as to accommodate various sizes of washing machine drain lines.

3,638,800

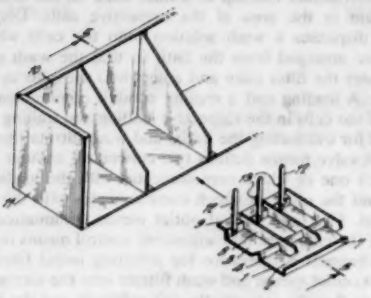
STORAGE DEVICE FOR ROLLABLE OBJECTS

Martin B. Frederick, Brooklyn, and John P. Posa, Mineola, both of N.Y., assignors to Supreme Equipment & System Corporation

Filed May 4, 1970, Ser. No. 34,392
Int. Cl. A47g 29/00
U.S. Cl. 211—40 15 Claims

A support is adapted to receive a rollable object in a normal position behind a stop. Means responsive to the application of rearward force to the object are provided behind the

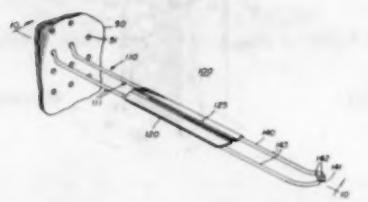
object. When a rearward force is applied to the object, the means impart sufficient forward motion to the object to permit the object to roll over the stop, at which point the object is readily retrievable.



3,638,801
ADJUSTABLE HANGER DEVICE

Charles O. Larson, Sterling, Ill., assignor to Chas. O. Larson Co., Sterling, Ill.

Filed Apr. 2, 1969, Ser. No. 812,644The portion of the term of the patent subsequent to Oct. 20, 1987, has been disclaimed.
Int. Cl. A47f *7/00*
U.S. Cl. 211—57 **5 Claims**



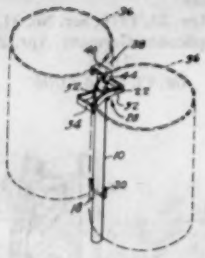
A hanger device comprises a support member with two spaced-apart, substantially parallel arms, and a sleevelike member which includes an upper portion and two side portions. The upper portion is disposed on the arms and the side portions are disposed therearound to enable the sleevelike member to be slid along the support member. A longitudinally extending ridge is formed in the upper portion to center hanging articles. There may also be provided an extension hook including two spaced-apart, substantially parallel arms also slidably disposed in the sleevelike member.

3,638,802
TRASH CONTAINER HOLDER

Elmer L. Westerfield, 2184 Cypress Drive, Lexington, Ky.

Filed Oct. 3, 1969, Ser. No. 863,463
Int. Cl. A47g *29/00*
U.S. Cl. 211—71 **1 Claim**

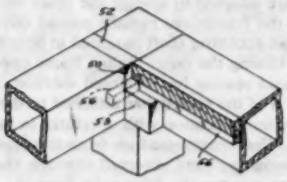
A trash container holder for supporting a pair of trash containers on a base. A telescopic standard extends up from the base and has a U-shaped bottom flange engaging member rigidly secured to the standard with the legs of the U projecting upwardly slightly from the base. A second inverted U-shaped member is secured to the upper member of the telescoping standard with its legs projecting downwardly to engage over the upper edges of a container. A spacer member is secured to the upper end portion of the lower standard member to prevent the trash containers from rotating about the standard. The telescoping standard members can be locked to prevent relative movement during use.



3,638,803
MODULAR CONSTRUCTION FRAME

Daniel C. MacMillan, Rte. 1, Box 856, Winter Haven, Fla.

Original application June 20, 1969, Ser. No. 842,770, now Patent No. 3,545,625, which is a division of application Ser. No. 685,064, Nov. 22, 1967, now abandoned. Divided and this application July 17, 1970, Ser. No. 55,673
Int. Cl. A47f *5/00*; F16b *7/00*
U.S. Cl. 211—148 **5 Claims**



A shelf support apparatus for use with corner lock joints having a prong extending into a tube for locking therein. The shelf support has a sleeve slidably mounted on the prong between the end of the tube and the base of the corner lock joint and a projection extending from the sleeve to form a shoulder, which shoulder may support elongated tubular members for supporting shelves, table tops or similar structural members for use in modular construction, furniture, or the like.

ERRATUM

For Class 211—177 see:
Patent No. 3,638,814

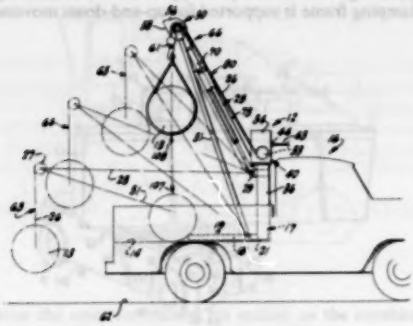
3,638,804
HOISTING APPARATUS

Carman H. Blakeway, and Darold D. Stone, both of Sacramento, Calif., assignors to Pacific Gas Equipment Company

Filed Sept. 17, 1969, Ser. No. 858,609
Int. Cl. B66c *23/04*
U.S. Cl. 212—8 **5 Claims**

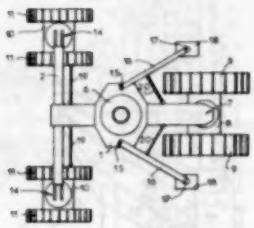
A telescoping boom is pivotally mounted at one end on a base framework, the other end of the boom carrying a sheave over which is led a cable connected at one end to a power winch. The other end of the cable carries a hook, or the like for attachment to a load. A remotely operated clamping mechanism on the boom controls the lifting and lowering of the load in conjunction with operation of the winch, the

clamping mechanism selectively serving to grip or release a translatable portion of the boom at the appropriate juncture,



as determined by the operator and depending upon the attitude of the boom and the horizontal location of the load.

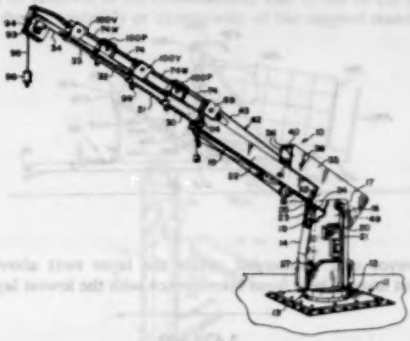
3,638,805
MOBILE CHASSIS FOR CARRYING A TOWER CRANE
Andre Garnier, Artaix, France, assignor to Potain, Chevilly Larue (Val de Marne), France
Filed Sept. 17, 1969, Ser. No. 858,691
Claims priority, application France, Sept. 19, 1968, 50404
Int. Cl. B60s *9/12*; **B62d** *61/08*
U.S. Cl. 212—38 **4 Claims**



A traveling crane is provided with three bogies, one front and two rear, to provide for the support and transport of the crane. Support arms having retractable jacks are pivoted to the base of the crane to provide additional stabilizing support on opposite sides of the front bogie. The rear bogies may be mounted at opposite ends of a transverse beam or may be mounted on the free ends of two pivoted arms. In either case, the bogies are connected by means of a pivoted lever arrangement to provide for leveling of the chassis. The bogies may be provided with endless tracks or wheels.

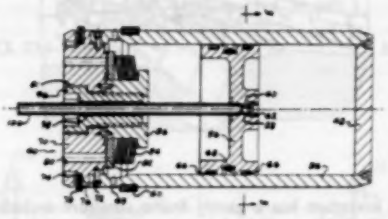
3,638,806
PORTABLE CRANE WITH EXTENDABLE BOOM
Wilburn L. Hippach, San Gabriel, Calif., assignor to Bliss & Laughlin Industries, Incorporated, Oakbrook, Ill.
Filed Aug. 1, 1969, Ser. No. 846,825
Int. Cl. B66c *23/06*
U.S. Cl. 212—55 **18 Claims**

Portable crane with extendable boom of concentrically and eccentrically disposed telescoping tubes in which the first section is a rigid, high-strength square tube and the remaining sections are of progressively reduced diameters with a large diameter cylindrical tube as a second section defining with the first section triangular channels therebetween at the four corners to house sheaves and cable flights of an extension cable system that provides a mechanical advantage



greater than two to one for extending the second section and the remaining telescoped tube sections proportionately.

3,638,807
HYDRAULIC FRICTION DRAFT GEAR
Robert L. Carlson, Chicago, and Rolf A. Madland, Palos Heights, both of Ill., assignors to Miner Enterprises, Inc., Chicago, Ill.
Filed Jan. 21, 1970, Ser. No. 4,663
Int. Cl. B61g *9/10*, *11/14*
U.S. Cl. 213—22 **2 Claims**

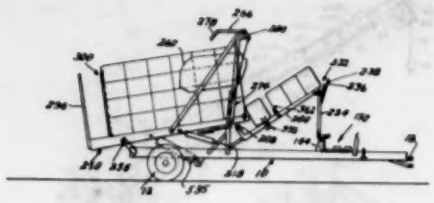


A hydraulic friction draft gear having a movable hollow ram casing defining with an interior floating accumulator piston assembly a gas chamber which is charged with gas through the accumulator piston assembly.

3,638,808
BALE WAGON
Donald M. Grey, Selma; Lee D. Butler, Kingsburg; Jerry W. Welker, Selma, all of Calif., and Jack W. Crane, New Holland, Pa., assignors to Sperry-Rand Corporation, New Holland, Pa.
Original application Aug. 26, 1968, Ser. No. 755,141, now Patent No. 3,502,230. Divided and this application June 6, 1969, Ser. No. 870,828
Int. Cl. B65g *60/00*
U.S. Cl. 214—6 B **4 Claims**

A bale wagon which unloads bales one at a time. The wagon is provided with a bale pickup, a bale tier former, and a load rack which receives the tiers of bales from the bale tier former. A cross conveyor is mounted on the bale tier former, and when discharging the bales are dropped a tier at

a time from the load rack onto the bale tier former, the lowest layer of bales on the tier being engaged by the cross



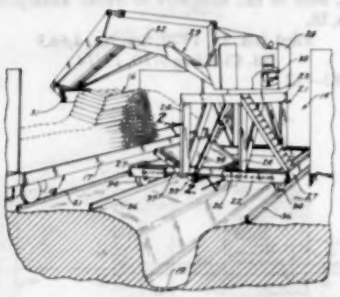
conveyor and discharged, while the layer next above the lowest layer is held from interference with the lowest layer.

3,638,809

PULPWOOD GANTRY RAKE

John L. Grundon, E. 16th & Howard Drive, Des Moines, Iowa

Filed Sept. 15, 1970, Ser. No. 72,384
Int. Cl. B65g *67/26*
U.S. Cl. 214—57 **5 Claims**



The invention has a gantry frame structure including an elevated platform on which is mounted a crane unit for rotational movement about a vertical axis. The frame assembly extends across a flume or conveyor means and is self-propelled longitudinally of the conveyor means. Open to one end of the frame structure and mounted thereon for movement transversely of the frame structure is downwardly and inwardly inclined chute means of a length to extend between the conveyor and a car positioned along one side of the gantry frame structure. The cute means is movable to an inner position, whenever the gantry frame structure is moved longitudinally of the conveyor means, and to an outer position contiguous with a flat car deck to be unloaded, when the gantry frame structure is in a moved position.

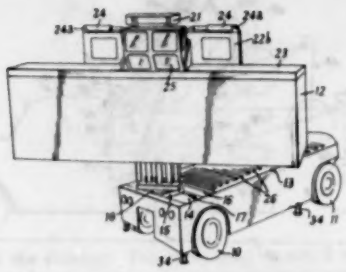
3,638,810

LOAD HANDLING VEHICLE

Leonard Stanley Mathew, Sutton Place Farm, Abinger Hammer near Dorking, Surrey, England

Filed May 8, 1969, Ser. No. 822,928
Claims priority, application Great Britain, May 13, 1968, 22,699/68
Int. Cl. B60p *1/52*
U.S. Cl. 214—75 G **4 Claims**

A vehicle for handling a freight container, comprises a wheeled chassis, a carriage which is traversible on guide means across the width of the vehicle at or adjacent one end of the vehicle, a vertical mast structure mounted for rotation about a vertical axis on said carriage and a clamping frame for supporting a container by its upper corners and/or edges. The clamping frame is supported for up-and-down movement



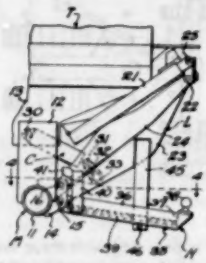
on the mast structure so that the clamping frame can be disposed to handle a container disposed beyond said one end and to either side of the vehicle, and the vehicle having a deck or equivalent supporting means on which a container can be placed by the clamping frame.

3,638,811

VEHICLE LIFT WITH TRAILER HITCH OR THE LIKE

Morris D. Robinson, 1509 W. 132nd St., Gardena, Calif.

Filed Apr. 6, 1970, Ser. No. 25,905
Int. Cl. B60p *1/44*
U.S. Cl. 214—77 P **8 Claims**



A trailer hitch or other auxiliary member is attached to the rear end of a vehicle (e.g. a cargo truck) in associated relation to a rear end lift, such that the hitch is free to move independently of the lift linkage when the lift is lowered for loading or unloading its deck, whereby the hitch may assume a noninterfering relation both to the ground surface and the lift linkage in such lowered position; whereas the movement of the lift to a stored position will automatically lock the hitch to the vehicle in rigid relation thereto such that it will properly function as a hitch when towing a trailer.

3,638,812

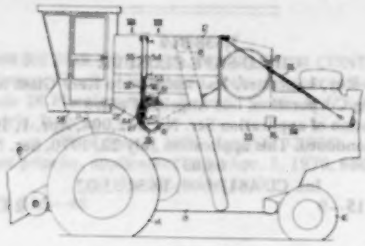
TILTING GRAIN AUGER

William G. Ryczek, Kansas City, Mo., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Apr. 7, 1970, Ser. No. 26,221
Int. Cl. B60p *1/42*
U.S. Cl. 214—83.26 **1 Claim**

This disclosure relates to a power-operated swingable auger conveyor which can be moved from operative

discharge position to an inoperative discharge position

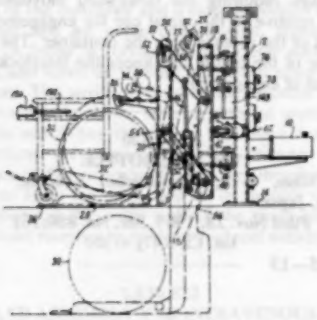


without the operator leaving his station on the combine and without breaking the power train from grain bin to auger.

3,638,813
WHEELCHAIR LIFTING DEVICE

John H. Strong, 1049 10th Ave., Sacramento, Calif. (Irene Strong, Sacramento, California, surviving wife and benificiary under the Last Will and Testament of said John H. Strong, deceased.)

Filed Nov. 25, 1969, Ser. No. 879,651
Int. Cl. B66c *23/00*
U.S. Cl. 214—148 **5 Claims**



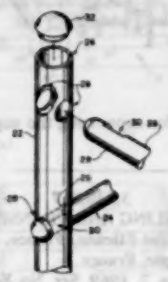
A chair lift having a mount, lifting arms supporting a chair platform, and horizontal swivel arms for rotating the chair platform about the mount, a power supply and electrical circuitry being provided for controlling hydraulic pressure in cylinders connected to move the lifting and swivel arms.

3,638,814
SUPPORT STAND

Mae H. Lowery, Cherokee Apartments, Oneonta, Ala.

Filed June 18, 1970, Ser. No. 47,281
Int. Cl. A47f *5/10*
U.S. Cl. 211—177 **8 Claims**

The disclosure relates to a knockdown support stand having a plurality of upright members adapted to interlockingly engage a plurality of interconnecting crossmembers. The ends of each crossmember is notched and yieldingly retained within an aperture in the upright member. The upright member is fabricated from pliable tubular material and is provided with a longitudinal slot to permit flexibility in the diametrical direction. The tubular member is molded to resiliently bear against the notched portion of the crossmember, much in the manner of a spring clip, and will thus firmly hold the crossmember in position. The tubular member can further be urged radially inward to facilitate entry or removal of the crossmember into or out of the aperture during assembly or disassembly of the support stand. An

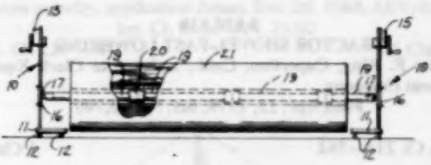


extension member is provided for attachment to one or more of the upright members in order to anchor the support stand to the surrounding surface. The notched portions of the crossmember and the apertures in the upright members are shown in several modified embodiments and furthermore the general configuration of the support stand as shown may be rectangular, circular, or triangular.

3,638,815
PORTABLE CARPET LIFT

Ray Fincher, 8570 Sweetwater, Dallas, Tex.

Filed May 20, 1970, Ser. No. 39,007
Int. Cl. B60p *3/40*
U.S. Cl. 214—390 **1 Claim**



This device is used in pairs to support, raise and lower carpets. The devices include a slideable frame which is moveable vertically by a manually operated wench and the base portion of the device carries casters so that the devices may be easily moved about.

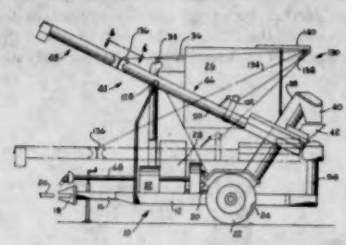
3,638,816
HINGED UNLOADING AUGER FOR GRINDER-MIXER

William W. Mann, Talmage, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed Mar. 30, 1970, Ser. No. 23,546
Int. Cl. B60p *1/42*
U.S. Cl. 214—521 **7 Claims**

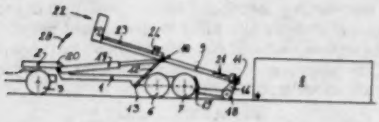
A hinged auger extension for a portable grinder-mixer. The main auger assembly is hingedly secured to the grinder-mixer for swinging movement about vertical and horizontal axes,

and the auger extension is hinged for swinging movement between an extended position and a folded position. Winch



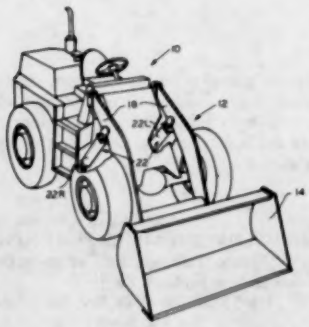
means are provided for supporting the auger in various positions of adjustment.

3,638,817
CONTAINER HANDLING AND TRANSPORTING DEVICE
Antoine Corompt, Saint-Etienne, France, assignor to Bennes Marrel, Saint-Etienne, France
Filed Aug. 7, 1969, Ser. No. 848,293
Int. Cl. B60p *1/64*
U.S. Cl. 214—517 **2 Claims**



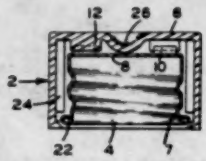
A device for loading heavy containers on to a semitrailer comprises a false chassis connected to the chassis of the semitrailer by two pairs of pivoted levers, and adapted to be raised and lowered by a ram-and-cylinder device. The pivoted lever arrangement provides a deformable quadrilateral such that when the false chassis is lifted from a tilted position where it receives the container, it also moves forwardly on the chassis of the semitrailer.

3,638,818
TRACTOR SHOVEL-FAST LOWERING
James F. King, Cupertino, Calif., assignor to Clark Equipment Company
Filed Apr. 22, 1970, Ser. No. 30,740
Int. Cl. B66f *9/00*
U.S. Cl. 214—762 **1 Claim**



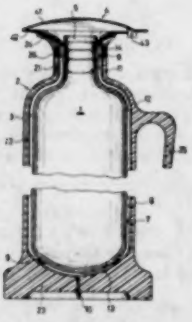
A tractor shovel having a pair of actuators for raising the shovel, and power down means for lowering it in an arrangement in which the power (hydraulic fluid) is applied to only one of the actuators so that the shovel is lowered at a faster rate than if the same quantity of fluid were applied to both the actuators.

3,638,819
CHILD-SAFE CLOSURE
Gerald L. Roy, Lancaster, Pa., assignor to Kerr Glass Manufacturing Corporation, Los Angeles, Calif.
Continuation of application Ser. No. 812,004, Apr. 1, 1969, now abandoned. This application July 22, 1970, Ser. No. 64,037
Int. Cl. A61j *1/00*; B65d *55/02*
U.S. Cl. 215—9 **2 Claims**



The closure is made to require a certain manipulation to remove the closure from a container and, hopefully, this manipulation is beyond the skill of a child. The closure comprises an inner metal cap and an outer plastic cap. A one-way engagement means between the metal cap and plastic cap permits the closure to be placed upon the bottle, but prevents removal of the closure from the container. An interlock structure requiring the downward movement of the plastic cap relative to the metal cap for engagement is used for removal of the closure from the container. The resiliency of the dome of the plastic cap keeps the interlock structure normally out of engagement.

3,638,820
VACUUM BOTTLE
Sadayuki Misu, 2-12, Ohtsukacho 3-chome, Takatsuki, Osaka-fu, Japan
Filed Nov. 28, 1969, Ser. No. 880,761
Int. Cl. A47j *41/00*
U.S. Cl. 215—13 **3 Claims**



A vacuum-type bottle having a single-layer glass bottle forming the liquid-receiving container thereof, and having a heat-reflecting layer on the outer surface thereof. The outer shell is positioned around the outside of the single-layer glass bottle and is spaced therefrom, and a heat-reflecting layer is positioned on the inner surface of the outer shell. The space

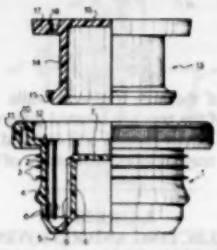
between the glass bottle and the outer shell is evacuated. The heat-reflecting layers are separated from each other in the vicinity of the mouth portions of the glass bottle and the outer shell to prevent conduction of heat therebetween.

3,638,821

CLOSURE FOR BOTTLES AND SIMILAR CONTAINERS

Piergiacomo Guala, Alessandria, Italy, assignor to Soc. Angelo Guala Di Piergiocomo & Roberto Guala & C.S.A.S., Alessandria, Italy

Filed July 7, 1970, Ser. No. 52,905
Claims priority, application Italy, Apr. 1, 1970, 68095-A/70
Int. Cl. B65d *39/00*
U.S. Cl. 215—48 **7 Claims**



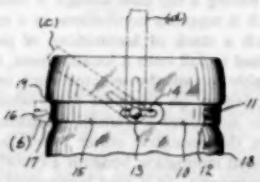
A closure for a container with an internal undercut in its neck consists in a flexible main member and rigid auxiliary member. The main member has a top flange which seats on the mouth of the container and a stopper portion in the form of an inner and an outer coaxial wall, separated by a clearance. A bulge is formed on the outer surface of the outer wall, and when the closure is fitted in place engages in the undercut. The auxiliary member has a tubular wall which extends into the clearance, with an external annular projection near its end. When the closure is in place the two annular projections are aligned, and the closure cannot be removed intact. For removal, the auxiliary member is pressed further in to force the projection on its tubular wall to pass the projection on the outer wall of the main member and allow the main member to be deformed and withdrawn.

3,638,822

BAIL BAND ASSEMBLY FOR INTRAVENOUS LIQUID CONTAINERS

John J. McCoy, Milwaukee, Wis., assignor to Charter Manufacturing Company, Inc., Milwaukee, Wis.

Filed Apr. 10, 1970, Ser. No. 27,352
Int. Cl. B65d *23/10*
U.S. Cl. 215—100 A **10 Claims**



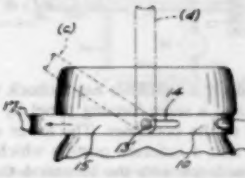
A thin, flexible attaching band is detachably connected beneath a shoulder at the lower end of a bottle. A shorter flexible bail-forming band having a finger recess is superimposed on the first band and connected thereby oppositely disposed rivets which slideably engage in longitudinal slots of the shorter band whereby the latter may be pulled outwardly and then swung upwardly to form a bail.

3,638,823

BAIL BAND ASSEMBLY FOR INTRAVENOUS LIQUID CONTAINERS

John J. McCoy, Milwaukee, Wis., assignor to Charter Manufacturing Company, Inc., Milwaukee, Wis.

Filed July 9, 1970, Ser. No. 53,493
Int. Cl. B65d *23/10*
U.S. Cl. 215—100 A **7 Claims**



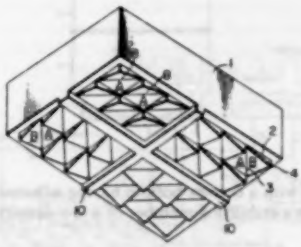
A thin, flexible attaching band is detachably connected beneath a shoulder at the lower end of a bottle. A shorter flexible bail-forming band is superimposed on the first band and pivotally connected thereto by rivets at the ends of the bail-forming band, at least one of which is slidably engageable in a longitudinal slot in the first band whereby the shorter band may be pulled outwardly and then swung upwardly on the rivets to form a bail.

3,638,824

PLASTIC CONTAINER

Takashi Sekiguchi, Sagamihara-shi; Shohei Tokiura; Sadahide Ogihara; Rokuro Yamamoto, all of Osaka-fu, and Akihiro Ikeuchi, Osaka, all of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan and Ube Industries, Ltd., Ube-shi, Japan

Filed Dec. 24, 1969, Ser. No. 887,888
Claims priority, application Japan, Dec. 28, 1968, 43/114492
Int. Cl. B65d *1/24, 21/02*
U.S. Cl. 220—21 **10 Claims**



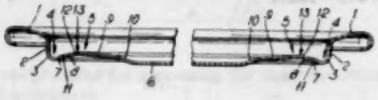
The improvement of a rectangular, bottomed container of plastic opening upwardly and having a plurality of bottle compartments divided by means of a latticelike partition. The underside of each of said divided compartments comprises, with the diagonal thereof as a boundary, a flat triangular zone and a triangular zone which gradually rises to an apex with said diagonal as a base, at least one of said triangular zones which gradually rise to an apex sloping in a direction different from the others.

3,638,825

CAN ENDS

Jozef Tadeusz Franek, and Peter Rhodes, both of Boreham Wood, England, assignors to The Metal Box Company Limited, London, England

Filed June 22, 1970, Ser. No. 48,003
Claims priority, application Great Britain, July 16, 1969, 35755
Int. Cl. B65d 7/42
U.S. Cl. 220—66 **10 Claims**



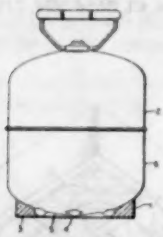
A sheet metal end for a container has a chuck wall which fits in a container and a seam-forming panel by which the end is end seamed to the container. The lower end of the chuck wall merges into a radiused portion which defines a channel and in accordance with the invention the radiused portion merges into a raised zone of the end through contiguous first and second portions which slope upwards from the radiused portion to a third portion which is contiguous with the second portion and merges into a central portion of the end. The second portion slopes upwards less steeply than the first portion. The third portion may be connected with the central portion through a fourth portion which slopes downwards less steeply than the third portion. A score for easy opening may be provided in a convex portion connecting the second and third portions.

3,638,826

VESSEL WITH STABILIZER

Arthur Frederick Barker, Newark, and Edward John Nack, Wilmington, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 26, 1970, Ser. No. 5,543
Int. Cl. B65d 25/20
U.S. Cl. 220—69 **6 Claims**



A vessel with a convex bottom having adhered to said convex bottom a stabilizing member of a low-density rigid plastic foam.

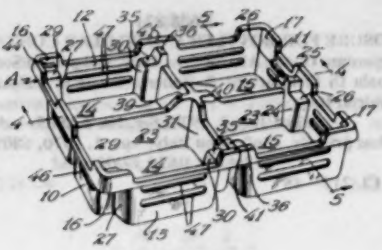
3,638,827

NESTABLE TRAY

John F. Lau, Jr., Minneapolis, and Glen E. Paulsen, Bloomington, both of Minn., assignors to T. O. Plastics, Inc., Hennepin, Minn.

Filed June 12, 1969, Ser. No. 832,657
Int. Cl. B65d 21/04
U.S. Cl. 220—97 D **7 Claims**

A nestable tray is provided having tapered side and end walls which slope upwardly and outwardly to nest together. Supporting posts are provided adjoining opposite ends of each tray or container, the walls of which slopes to permit nesting. The supporting posts terminate on a common plane



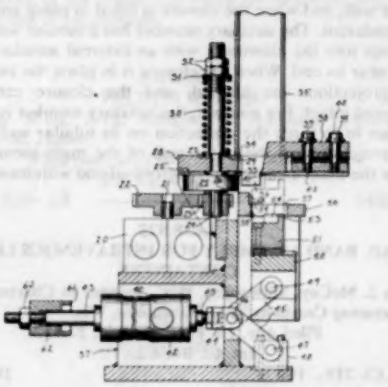
below the level of the side and end walls. The supporting posts at one end of the tray are located differently from those at the other end. When turned end for end, the supporting posts of the lower tray support the bottom of the upper tray.

3,638,828

DEVICE FOR SELECTING AND REMOVING STACKS OF FLAT ITEMS FROM A MAGAZINE

Lester M. Koelsch, Brookfield, Wis., assignor to Ro-Band Corporation, Menomonee Falls, Wis.

Filed Dec. 15, 1969, Ser. No. 884,836
Int. Cl. B65h 5/00
U.S. Cl. 221—176 **16 Claims**



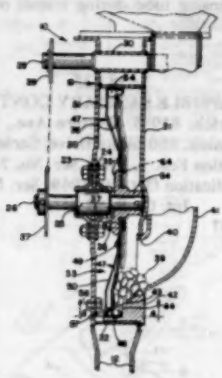
An eccentric having a top cam surface is rotatable from a position in which it supports laminations in a magazine to a position in which a stack of laminations of predetermined height is permitted to fall onto a locating nest, the eccentric being then movable to shift the selected stack into a laterally offset located position on the nest from which it can be deposited by the nest onto a transfer platform. During the latter movement the eccentric either moves an uppermost critically positioned lamination beneath a cutoff blade at the bottom of the magazine, or if said lamination will not pass beneath the cutoff blade, a spring allows the cam surface to move beneath said lamination so that lateral movement of the selected stack is accomplished without interference from the critically positioned lamination, the eccentric then supporting the laminations in the magazine until the next selecting cycle begins.

3,638,829

FINGER-TYPE PLANTER

Roland J. Frase, Roselle, and Gordon R. O'Neil, Westmont, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed May 14, 1970, Ser. No. 37,231
Int. Cl. A01c 7/12
U.S. Cl. 221—219 4 Claims



Seed metering apparatus for planters which includes a housing having a seed supply and a seed selecting disk rotatable in the housing with its lower peripheral portion disposed in the seed supply, the disk having spring fingers mounted thereon with seed clasping portions yieldable to an open or seed receiving position and axially biased to a closed or seed clasping position, actuating means being provided in the housing and successively engageable with the fingers to open and close the seed clasping portions thereof.

3,638,830

PILL DISPENSER WITH TOP ROTATABLE RELATIVE TO BASE

Paul Belokin, Jr., 6919 W. 43rd St., Berwyn, Ill.

Filed Oct. 6, 1969, Ser. No. 863,998
Int. Cl. B65d 83/04
U.S. Cl. 221—246 11 Claims

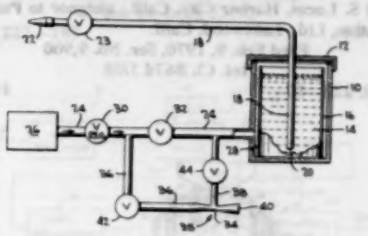
Pocket-size, easy-operating and simply constructed pill or tablet boxes are disclosed having two essentially flat disc-shaped cover and bottom members rotatable relative to each other and defining a central pill compartment and outlet openings between nested interlocking depending sidewalls wherein movement of the cover and bottom members to one position encloses the pills against dust and dirt, movement of the members to a second position entraps a selected pill in a walled recess, and movement of the members to the first position again closes the compartment and dispenses the selected pill or tablet.

3,638,831

DISPENSING OF HARDENABLE LIQUIDS

William A. Pauwels, Southfield, Mich., and Robert G. Nystrom, Glastonbury, Conn., assignors to Loctite Corporation, Newington, Conn.

Filed Mar. 25, 1970, Ser. No. 22,456
Int. Cl. B65d 83/00
U.S. Cl. 222—1 10 Claims



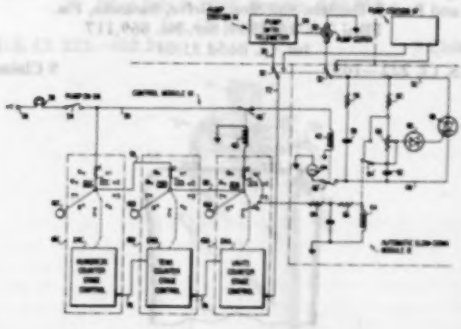
An enclosed vessel for containing a supply of hardenable liquid to be dispensed together with selectively operable pressurizing means for introducing air into the container to exert a superatmospheric pressure on the surface of said liquid, whereby to discharge such liquid from the container into the atmosphere through a discharge line controlled by a dispensing valve and having an intake end submerged within the liquid. There are provided evacuating means operable during discontinuance of the pressurizing operation to evacuate air from the container whereby to withdraw liquid from the discharge line back into the vessel and, optionally, to maintain a reverse flow of air through the discharge line so that the air is introduced into the liquid at a submerged location to thence bubble upwardly through the liquid. In a modified version, the pressurizing air also is introduced into the vessel at a location beneath the surface of the liquid so that it, too, bubbles up through the liquid.

3,638,832

AUTOMATIC SLOWDOWN AND CUTOFF SYSTEM

Charles R. Sauber, Raleigh, and Roy A. Parker, Fayetteville, both of N.C., assignors to Aerotron, Inc., Raleigh, N.C., by said Sauber

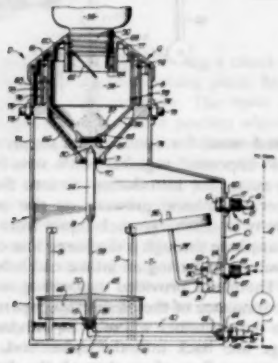
Filed Jan. 13, 1970, Ser. No. 2,612
Int. Cl. B67d 5/30
U.S. Cl. 222—16 6 Claims



A system for dispensing a precise quantity of a fluid. When power is applied to a motor, the motor drives a pump to dispense fluid at a relatively high rate. However, in response

to an indication that a quantity of fluid, slightly less than the desired quantity, has been dispensed, power to the motor is substantially reduced. This slows the dispensing rate so that power may be removed from the motor and the pump stopped when precisely the desired quantity of fluid has been dispensed.

3,638,833
MEANS FOR CHLORINATING SWIMMING POOLS
Robert S. Lucas, Harbor City, Calif., assignor to Purex Corporation, Ltd., Lakewood, Calif.
Filed Feb. 9, 1970, Ser. No. 9,900
Int. Cl. B67d *5/08*
U.S. Cl. 222—57 **14 Claims**

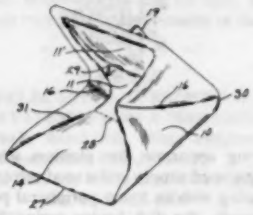


Apparatus for sanitizing swimming pools in which the sanitizing agent such as chlorine-containing powder or tablets is metered into circulating water to avoid undue concentrations of agent in water. The treated water is withdrawn to the pool and not permitted to stand in the lines between filtering cycles. separately valved inlet and outlet ports in the agent-water mixing chamber are opened or closed by independent floats which maintain a desired water level in the mixing chamber during water circulation and enables closing of the chamber outlet after gravity draining of water from the chamber.

3,638,834
COLLAPSIBLE SANITARY CONTAINER
Eugene E. Goodrich, 819 S. Western Ave., Park Ridge, Ill., and Paul J. Daniels, 880 Siesta Drive, Sarasota, Fla.
Filed Oct. 24, 1969, Ser. No. 869,117
Int. Cl. B65d *35/08*
U.S. Cl. 222—105 **9 Claims**

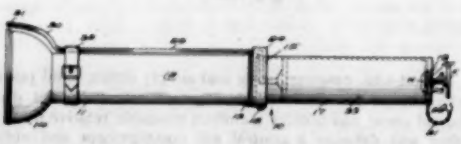
A generally rectangular polyethylene container for liquids such as milk having a collapsible spout along one corner of the top and having an integral foldable handle on the top, the container being adapted to be folded to collapsed condition by folding which is so arranged that the spout and handle are enclosed within the folds and accommodated in recesses between folded portions, the container being automatically opened out when it is filled with liquid and being self-supporting when thus filled. The foldable handle has an inclined outer edge and the handle is adapted to open out so that its inclined edge tilts the container toward the spout when the container in the dispensing cabinet is partially emptied, and the handle has an opening in a corner which is adapted to receive the dispensing tube during transit of the filled container.

3,638,835
COLLAPSIBLE SANITARY CONTAINER
Eugene E. Goodrich, 819 S. Western Ave., Park Ridge, Ill., and Paul J. Daniels, 880 Siesta Drive, Sarasota, Fla.
Original application Feb. 1, 1968, Ser. No. 702,257. Divided and this application Oct. 29, 1969, Ser. No. 872,276
Int. Cl. B65d *25/16*
U.S. Cl. 222—107 **4 Claims**



A generally rectangular polyethylene container for liquids such as milk having a retractable spout with spaced annular supporting ribs and adapted to be folded to collapsed condition and sealed promptly after manufacture, the material being so constructed and of such nature as to permit said folding but having sufficient strength that the container may be suspended from one of the supporting ribs of the spout prior to filling so that it may be filled without bottom support, the container being automatically opened out by the filling process and being self-supporting when filled with liquid.

3,638,836
COMBINED FLASHLIGHT AND CHEMICAL EXPELLING DEVICE
Charles W. Vickers, III, Jacksonville, Fla., assignor to Percy Rosenbloom, Jr.
Continuation of application Ser. No. 757,856, Sept. 6, 1968, now abandoned. This application Feb. 4, 1970, Ser. No. 9,254
Int. Cl. B67d *5/66*
U.S. Cl. 222—113 **10 Claims**



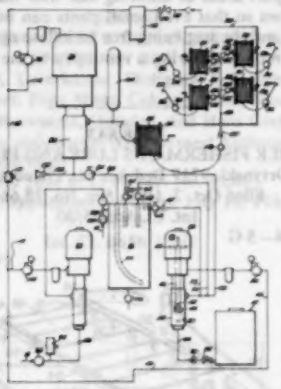
A can of aerosol expelled chemical is combined with a flashlight, and chemical from the can passes through a conduit and out through a dispensing nozzle arranged so that the chemical is dispensed toward the same point on which the flashlight beam impinges. Means are provided for selectively dispensing the chemical from the can.

3,638,837

PROPORTIONING AND CLEANING DEVICE

Donald E. Fullerton, Miami, Fla., assignor to B & B Chemical Company, Inc., Miami, Fla.

Filed June 20, 1969, Ser. No. 835,153
Int. Cl. B67d 5/46
U.S. Cl. 222—134 3 Claims



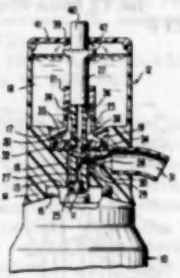
A device to preselect and maintain a ratio of two liquids and have the ratio remain substantially constant and to maintain sufficient pressure to supply cleaning equipment, positioned up to several hundred feet away, with the correctly proportioned mixture, the device being composed of three systems, one for feeding the two liquids, one for mixing the two liquids and the third for pumping the mixture to the cleaning equipment, the first two systems being adapted to be shut off completely while the third system is connected to a source of supply of a chemical such as a paint stripper for pumping same to a remote point for usage. The two liquids are preferably a chemical and a solvent therefore.

3,638,838

TWO FLUID AEROSOL DISPENSER WITH EXTERNAL SECONDARY FLUID CONTAINER

Leonard L. Marraffino, deceased, late of Fort Lauderdale, Fla., and Roger H. Harper, executor, 2560 S.E. 9th St., Pompano Beach, Fla.

Filed May 27, 1969, Ser. No. 828,276
Int. Cl. B67d 5/52
U.S. Cl. 222—136 1 Claim



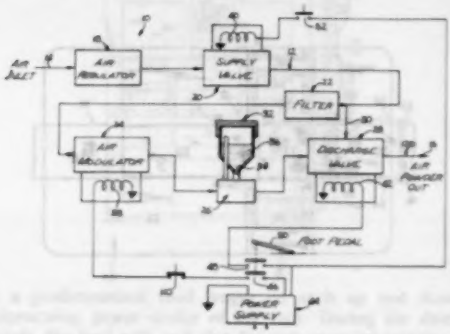
A primary fluid is held in a pressurized container having a conventional outlet valve. An attachment container for a secondary fluid is constructed for coupling engagement with the pressurized container so that an integral dispenser may be formed. The discharge of secondary fluid is regulated by a distortable valve element and the secondary fluid becomes entrained in a jetstream of primary fluid in a common outlet nozzle.

3,638,839

APPARATUS FOR DISPENSING POWDER SUCH AS ABRASIVE POWDER

Herbert G. Weightman, Los Angeles, Calif., assignor to Comco Supply, Inc., Burbank, Calif.

Filed July 18, 1969, Ser. No. 842,881
Int. Cl. B65g 53/16
U.S. Cl. 222—193 12 Claims



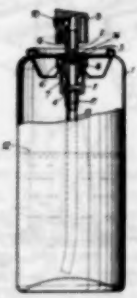
Apparatus for dispensing powder, such as abrasive powder, at a controlled rate from a supply tank to a mixing chamber within a conduit through which flows a gas for conveying the powder to a point of use. A gas pressure modulating valve is installed within the conduit upstream of the mixing chamber for alternately opening and closing the conduit passage at a selected cyclic frequency to modulate the pressure within the mixing chamber between selected high- and low-pressure levels. The powder tank is continuously pressurized to a pressure level greater than the lower pressure level within the mixing chamber, whereby the pulsating pressure within the mixing chamber effects intermittent dispensing of powder at a controlled rate from the tank to the mixing chamber. Valves of unique design and arrangement are provided for controlling gas flow through the apparatus. The principal application of the apparatus involves controlled dispensing of abrasive powder in a high-precision abrasive cutting tool.

3,638,840

SAFETY VALVE FOR AEROSOL CONTAINERS

Mitsuo Ishida, 9, Ageba, Shinjuku-ku, Tokyo, Japan

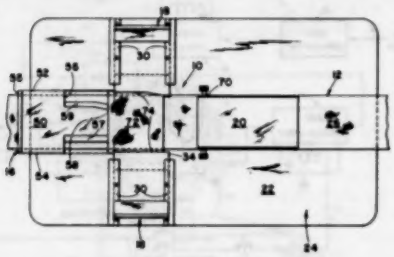
Filed July 9, 1969, Ser. No. 840,355
Int. Cl. B65d 47/10
U.S. Cl. 222—402.24 9 Claims



A safety valve for an aerosol container which permits the discharge of the residual propellant gases in a used container

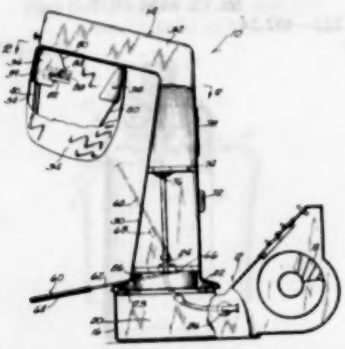
when the valve stem is broken off. The container is thereby rendered safe from explosion caused by heat and also cannot be refilled.

3,638,841
MATERIAL FOLDING AND CREASING DEVICE
Anthony G. Tucci, 96-02 103rd Ave., Ozone Park, N.Y.
Continuation-in-part of application Ser. No. 711,007, Mar. 6, 1968, now Patent No. 3,491,926. This application Jan. 19, 1970, Ser. No. 3,970
Int. Cl. A41h *33/00*
U.S. Cl. 223—38 **5 Claims**



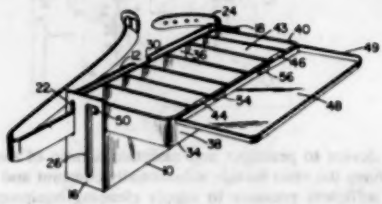
A device for folding and creasing cloth in the manufacture of garments and specifically to a device for folding the edges, in fixed position, of a piece of suitable material, such as, for example, in the manufacture of cloth belts, pockets, pocket flaps, epaulets and the like. The device comprises means for folding a piece of material into the desired configuration in combination with holding means which serve to hold the material in folded condition until it can be creased, the folding and holding means acting in association with a movable conveyor belt, the actuation of which draws the workpiece into a suitable pressing unit resulting in the folds being rendered in a creased condition. The device is also shown having means for operating the folding and holding means automatically in predetermined timed relationship.

3,638,842
PANTS TOPPER COMBINATION
Norman A. Buckley, Wauwatosa, and Peter D. Rasmussen, Cedarburg, both of Wis., assignors to McGraw-Edison Company, Elgin, Ill.
Filed Oct. 29, 1970, Ser. No. 84,992
Int. Cl. D06c *5/00*
U.S. Cl. 223—73 **16 Claims**



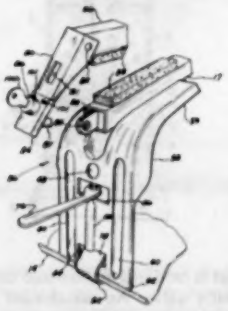
A pants topper combination suitable to be operatively associated with a steam air finisher having a horizontal annular seat surrounding means for discharging a conditioning fluid such as steam and/or air upwardly of the seat, the topper combination including a hollow form disposed on the finisher seat and conveying the conditioning fluid for discharge to within a downwardly depending bag about which a pair of pants can be dressed, a front support and a movable rear support being provided inside the bag opening fully the waist of differing size pants, and the front support having vertically spaced support areas of differing size with the smallest area at the bottom so that even small pants can fit over the support areas, and the bag being free to inflate against the pants dressed thereon and having a vent open to the fly area of the pants.

3,638,843
WEARABLE FISHERMAN'S LURE AND FLY CARRIER
Samuel J. Ortynski, 9717 Dedaker St., Philadelphia, Pa.
Filed Oct. 7, 1970, Ser. No. 78,665
Int. Cl. A45f *5/00*
U.S. Cl. 224—5 G **6 Claims**



A carrier for holding lures and flies has a box divided into compartments, and is received in an open top holder which has a backwall, a shorter front wall and sidewalls. The box is slidably secured in the holder through pins cooperating with elongated slots in the sides of the holder. Remote from the pins, the box has an outfolding lid hinged thereto and stops below the hinges so that the lid can serve as a horizontally disposed handling surface. Belt receiving slots are provided in the sidewalls of the holder adjacent the backwall for slidably receiving a belt secured to the wearer. The respective dimensions of the box and holder define a space therebetween which provides a sliding channel for the belt.

3,638,844
CAR TOP CARRIER STRUCTURE WITH LOCKING MEANS
Joseph Bronson, 15397 Cruse Ave., Detroit, Mich.
Continuation-in-part of application Ser. No. 732,378, May 27, 1968, Pat No. 3,525,461. This application Aug. 14, 1969, Ser. No. 850,185
Int. Cl. B60m *9/00*
U.S. Cl. 224—42.1 F **15 Claims**



A carrier structure for carrying articles above the roof of an automobile including a frame for the articles which

mounts transversely of the roof by a pair of clamping devices that are attachable with the rain gutters along the sides of the roof. A key-operated lock on each clamping assembly prevents unauthorized removal of the carrier structure from the vehicle. In a second embodiment, a ski carrier is disclosed having a key-operated lock for securing the skis to the carrier and the carrier to the automobile.

3,638,845

DEFLECTING GUIDE MECHANISM FOR BANDS COATED ON ONE SIDE

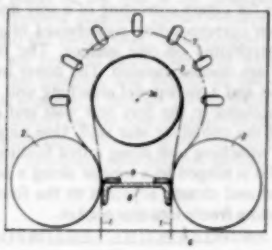
Peter Herzhoff, Leverkusen; Wolfgang Schweicher, Leverkusen-Wiesdorf; Fritz Maus, Cologne; Willi Wasser, Leverkusen; Kurt Browatzki, Opladen, and Hans Gref, Cologne, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed June 5, 1970, Ser. No. 43,855

Claims priority, application Germany, July 16, 1969, P 19 36 175.2

Int. Cl. B65h *17/32*

U.S. Cl. 226—97 **3 Claims**



In a deflecting guide mechanism for webs coated on one side, especially for drying chambers, a fixed support is arranged transversely of the direction of travel of the web in the vicinity of the guide loop and carries at both its ends side screens which are arranged perpendicularly of the surface of the web parallel to one another and which have openings arranged on an arc concentric to the deflection axis of the web. Means are provided for supplying compressed air to the space formed between the support, the side screens and the web, whose reverse side is guided over part of the periphery of the guide rollers.

3,638,846

FEEDING APPARATUS USING RACK AND PINION MECHANISM HAVING DWELL PERIODS

Chester M. Wiig, Lincolnwood, Ill., assignor to F. J. Littell Machine Company, Chicago, Ill.

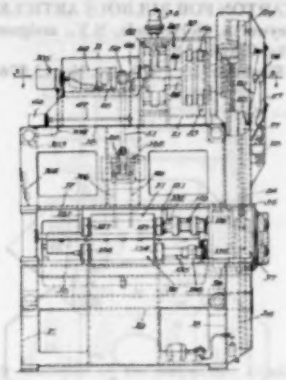
Filed Aug. 10, 1970, Ser. No. 62,523

Int. Cl. B65h *17/22*

U.S. Cl. 226—142 **20 Claims**

For intermittently feeding strip material the invention provides rack and pinion mechanism, the rack operating on the pinion as the rack is caused to reciprocate by crank arm structure including a trunnion member carried in an adjustable manner on a rotating faceplate by means of a threaded shaft journaled for rotation within the faceplate. The threaded shaft can be rotated during operation of the apparatus to vary the position of the trunnion member on the faceplate for obtaining the desired feed lengths. A constantly rotating camshaft carrying conjugate cams produces intermittent rotation of the cam follower shaft which carries the faceplate, the said intermittent rotation being characterized by a dwell period at the end of each reciprocating stroke. The pinion is part of clutch structure which is duplicated for the lower and upper feed rolls. Each reciprocation of the rack produces a power stroke since on the downstroke one clutch structure is rendered operative and on the upstroke the other clutch structure is made operative.

In operation of the present apparatus, the strip material is fed or advanced by the rotating upper and lower feed rolls



for a predetermined feed length on each up and down reciprocating power stroke of the rack. During the dwell periods, the feed rolls and also the strip material remain at rest.

3,638,847

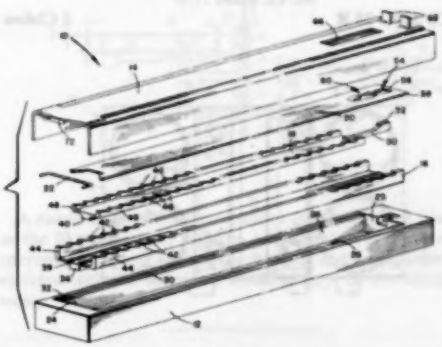
RATCHET-DRIVEN CARTRIDGE FOR SURGICAL INSTRUMENTS

Douglas G. Noiles, Ridgefield, and Graham W. Bryan, New Canaan, both of Conn., assignors to United States Surgical Corporation, Baltimore, Md.

Filed July 6, 1970, Ser. No. 52,337

Int. Cl. B25c *5/16*

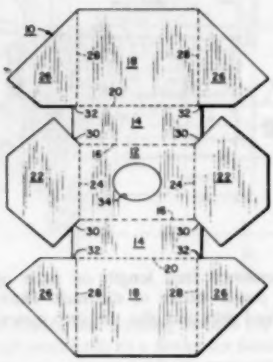
U.S. Cl. 227—120 **11 Claims**



A disposable staple-housing cartridge adapted for mounting on a surgical instrument and particularly suited for stapling skin and fascia. The cartridge comprises, basically, a stationary sawtooth staple-retaining member, a sawtooth staple-driving member mounted for reciprocating movement, an anvil, and a staple pusher. For each reciprocation of the staple-driving member, each of the staples housed in the cartridge is driven forward from one tooth to the next successive tooth of the retaining member. The pusher element controls the movement of the reciprocating drive member, advances each of the staples, ejects a staple from the cartridge and

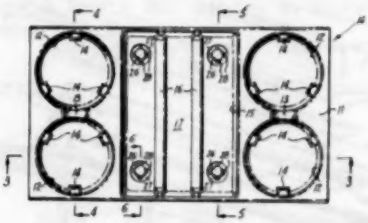
bends the ejected staple around the anvil; this occurs for each drive cycle of the pusher. The pusher is, in turn, operated by the associated surgical instrument.

3,638,848
CARTON FOR BULBOUS ARTICLES
Ernest R. Heyworth, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Feb. 20, 1970, Ser. No. 13,076
Int. Cl. B65d *5/08*
U.S. Cl. 229—16 **9 Claims**



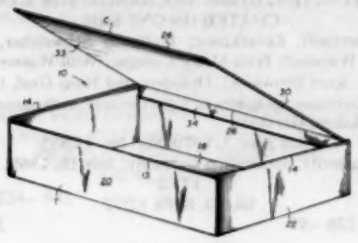
A protective carton for bulbous articles having substantially parallel end surfaces of polygonal configuration connected by planar rectangular wall portions to form a compact septrahedronal prismatic carton closure.

3,638,849
FOLDING PLASTIC TRAY
Harford E. Goings, 5428 Center Drive, Camp Springs, Md.
Filed July 14, 1970, Ser. No. 54,688
Int. Cl. B65d *1/36*
U.S. Cl. 229—28 R **5 Claims**



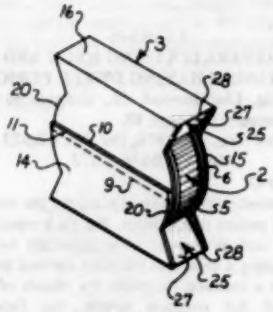
A folding plastic tray for supporting solid food and beverages in cups, bottles, or cans on the seat of a motor vehicle. The tray has side members which fold down to engage the seat with the side members each having a lower edge which is straight for a portion of its length and curves downwardly for the remaining portion of its length. A locking flap is hingedly connected to the straight portion of the edge of the side member and has male snap elements integrally formed thereon which snap through openings in the tray bottom to lock the sides in their erected position. Ribs in the bottom of the tray support the solid foodstuffs above the snaps to prevent accidental disengagement of the snaps from the snap openings due to the pressure of foodstuff thereon.

3,638,850
PAPERBOARD CONTAINER
William B. Dubey, Rockville Centre, N.Y., assignor to Alford Industries Incorporated, Ridgefield Park, N.J.
Filed Jan. 14, 1970, Ser. No. 2,812
Int. Cl. B65d *5/32*
U.S. Cl. 229—33 **10 Claims**



A container for cigars consisting of a tray and a cover that are made from corresponding paperboard blanks which are coated and preprinted on one surface. The tray front wall and sidewalls are double paneled. The cover includes a rigid triple-panel lid and a multipanel attaching unit which defines a pocket, is secured to the tray rear wall and constitutes, in effect, part of the container rear wall. One panel of the lid is hinged to the attaching unit along a first foldline and another panel of the lid is hinged to a tongue along a second foldline that is parallel and closely adjacent to the first foldline, said tongue projecting freely into the pocket.

3,638,851
CARTON FOR CYLINDRICAL ARTICLE
Robert J. Offer, and Eugene J. Samalon, both of Racine, Wis., assignors to Tenneco Inc., Racine, Wis.
Filed Jan. 9, 1970, Ser. No. 1,785
Int. Cl. B65d *5/02*
U.S. Cl. 229—40 **4 Claims**



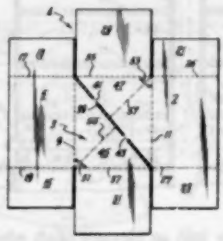
A carton for packaging a cylindrical article such as an automotive air filter. The carton comprises an open-ended container of thin material such as cardboard having inwardly folding tab portions to retain the cylindrical article in the carton. The open ends of the carton provide a view of the contents of the carton. The carton and open ends may be covered with a transparent film.

3,638,852

FULLY COLLAPSIBLE CORRUGATED BOX AND BLANK THEREFOR

Joseph Solanka, Baltimore, Md., assignor to Wagner Brothers Containers, Inc., Baltimore, Md.

Filed Oct. 12, 1970, Ser. No. 80,075
Int. Cl. B65d *5/36, 5/42*
U.S. Cl. 229—41 5 Claims



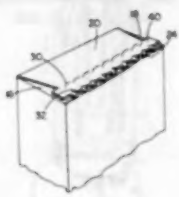
The bottom panel of the box is cut diagonally from one corner to the opposite diagonal corner, except for a pair of holding tabs, and the two similar, right triangle-shaped panels thus provided are creased along fold lines which bisect the right angle of the triangles and extend to the diagonal cut. After the box is erected, it may be fully collapsed by pushing inwardly or outwardly on the bottom panel to break the holding tabs and then folding the triangular-shaped panels on the fold lines thereof to collapse the erected panels.

3,638,853

BOXBOARD CARTON CLOSURE

George S. Perry, Nashua, N.H., assignor to Universal Packaging Corporation, Concord, N.H.

Filed Oct. 15, 1970, Ser. No. 81,001
Int. Cl. B65d *5/54, 17/00*
U.S. Cl. 229—51 TS 7 Claims



A boxboard carton has a closure which is sealed by activation of adhesive applied to facing surfaces of closure flaps near a corner of the carton, the facing surfaces being on the same side of the boxboard sheet from which the carton is made, the carton being openable without rupturing the adhesive seal.

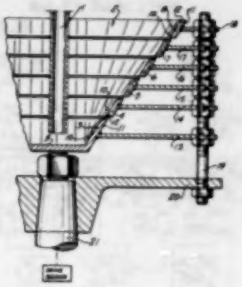
3,638,854

CENTRIFUGE CONSTRUCTION

Rudiger Elsner Von Gronow, Park Forest, Ill., assignor to Krauss-Maffei Aktiengesellschaft, Munich, Germany

Filed Mar. 16, 1970, Ser. No. 19,699
Claims priority, application Germany, Mar. 14, 1969, G 69 10 274
Int. Cl. B04b *1/00*
U.S. Cl. 233—27 12 Claims

A drum for a centrifuge is mounted for rotation about its longitudinal axis and has a circumferential wall and an outlet end. It is composed of a plurality of slightly spaced axially adjacent rings each of which has an outer circumferential surface and an inner circumferential surface with the latter continuously diverging in direction towards the opening. Each of the rings has a minimal inner diameter greater than the



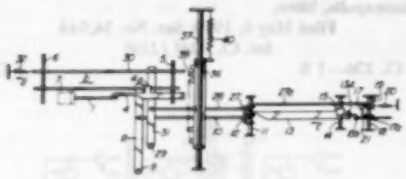
minimal inner diameter of the respective axially preceding ring and an axial end face facing said outlet end and extending from the inner to the outer circumferential surface. Admitting means admits mixture to be separated into the drum, and drive means rotates the drum about its axis.

3,638,855

NUMERAL PIN SETTING MECHANISM IN CALCULATING MACHINES AND THE LIKE APPARATUS

Kenji Miyake, Kunitachi-shi, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Jan. 7, 1970, Ser. No. 1,153
Claims priority, application Japan, May 15, 1969, 44/37618
Int. Cl. G06c *23/04*
U.S. Cl. 235—60 TK 3 Claims



A numeral pin setting mechanism in a calculating machine or the like apparatus, wherein a mechanism is provided for operating a column shifting mechanism, and is operatively associated with the individual numeral keys by the drive of a motor.

3,638,856

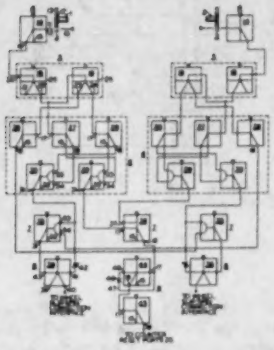
WHEEL SLIP DETECTOR HAVING FLUID LOGIC DEVICES

Edward T. Dressler, Jr., Mars Estates, Md., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Dec. 30, 1969, Ser. No. 889,129
Int. Cl. G06m *3/02*
U.S. Cl. 235—201 4 Claims

A fluidic wheel slip detector circuit for monitoring the synchronization or relative frequency of rotation of wheel/axle units of a railway vehicle by comparing the relative condition of a pair of fluidic binary counters driven in accordance with the rotational speed of the wheel/axle unit

with which each counter is associated. Fluidic digital decoding circuitry is provided to continuously sense and indicate the progression of the counters. Fluidic decision logic circuitry including comparator means responds to a predetermined signal from the decoding circuitry for comparing the progression of the respective counters associated with each wheel/axle unit and controls fluidic memory means which

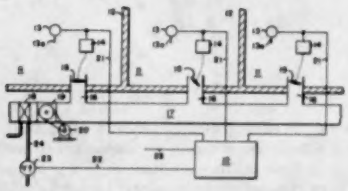


produces an indication of which wheel/axle unit is rotating at the higher frequency in the absence of synchronization therebetween and maintains the signal until synchronization is restored. The decision logic circuitry also includes fluidic reset means responsive to another predetermined signal from the decoding circuitry to assure that the counters are reset in phase each cycle when either one of the counters first reaches a predetermined count.

3,638,857
PRESSURE DISCRIMINATOR

Joseph E. Hogel, River Grove, and Donald H. Spethmann, Arlington Heights, both of Ill., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed May 6, 1970, Ser. No. 34,944
Int. Cl. F24f *11/08*
U.S. Cl. 236—1 B **5 Claims**



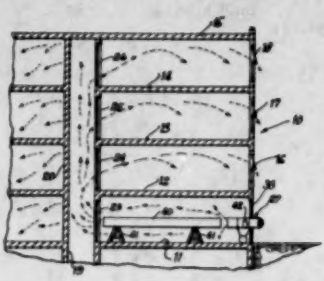
A pneumatic pressure responsive apparatus utilizing diaphragm logic which selects and transmits the lowest pressure of a plurality of input pressures.

3,638,858
TEMPORARY HEATING SYSTEM FOR MULTILEVEL BUILDINGS

Erhard E. Alms, 419 Valencia Ave., Barrington, Ill.

Filed Jan. 5, 1970, Ser. No. 543
Int. Cl. F24d *5/02*
U.S. Cl. 237—50 **2 Claims**

A temporary heating system for buildings under construction requiring hot air for drying plaster, paint, mortar and the like. A portable high-capacity burner is placed in a doorway leading to the outside of the building on the lowest floor to be heated. The burner is baffled to have the burner intake outside the building and the hot products of combustion and



air blown inside into an elevator shaft which then conducts the hot air to the upper levels. The elevator doors and the windows of the building are used as flow regulators for their respective floors.

3,638,859
FLUID ATOMIZERS

John James MacFarlane, Church Crookham, England, assignor to National Research Development Corporation, London, England

Filed Aug. 1, 1969, Ser. No. 846,841
Claims priority, application Great Britain, Aug. 6, 1968, 37,396/68
Int. Cl. B05b *3/14*
U.S. Cl. 239—102 **6 Claims**

Air issuing at high velocity from an annular nozzle under choked flow conditions is directed at a resonator constituted by a well formed in a cup spaced from the nozzle and coaxial with it. The airflow is thus induced to vibrate and liquid is injected within the annular curtain and in the same direction to impinge on the vibrating air mass by which it is atomized into fine droplets.

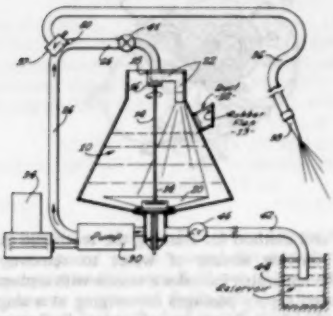
3,638,860
AGRICULTURAL APPARATUS

Richard A. Carlyon, Jr., 1000 Sharrow Way, Carson City, Nev.

Original application Oct. 16, 1968, Ser. No. 768,038, now abandoned. Divided and this application May 26, 1970, Ser. No. 40,610
Int. Cl. B05b *9/00*
U.S. Cl. 239—127 **2 Claims**

Improved agricultural apparatus is provided which, for example, may be mounted on the back of a truck, and which

may be used to mulch, fertilize and seed an area conveniently and efficiently. The apparatus to be described includes a tank containing a slurry of the seed, mulch and fertilizer. A circulating pump is coupled to the tank for circulating the slurry through the tank, and a spray-dispensing hose is coupled to the recirculating line for receiving a portion of the circulating



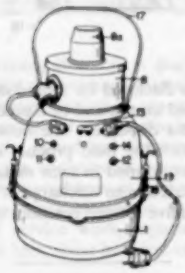
slurry to be sprayed thereby over the aforesaid area. The present invention is particularly concerned with an improved valve assembly for use in the apparatus, and which is positioned in a tangential manner with respect to the circulating conduit, so that there is no tendency for the cellulose in the mulch to congregate behind the valve and clog the valve, as is prevalent in the prior art structures.

3,638,861

MICROMIST AND AEROSOL GENERATORS

Pierre Nikel, Nice, France, assignor to Laboratoire Phagogene, Nice, France

Filed Mar. 24, 1969, Ser. No. 809,606
Claims priority, application France, Mar. 25, 1968, 22218
Int. Cl. B05b *3/02*
U.S. Cl. 239—216 **8 Claims**



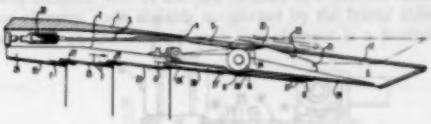
A generator of micromist and aerosols is disclosed herein, and has a chamber for condensing and stabilizing a mist. The chamber is defined by a first dome which is disposed inside a second dome, so that there is provided an annular cavity between the two domes for housing electrical components. A baffle is provided inside the condensing chamber for limiting the size of particles expelled by the device.

3,638,862

THRUST NOZZLE OF TURBOJET ENGINES

Walter Wildner, Munich, Germany, assignor to Motoren-Und Turbinen-Union Muenchen GmbH, Munich, Germany

Filed July 17, 1970, Ser. No. 55,702
Claims priority, application Germany, July 19, 1969, P 19 36 800.4
Int. Cl. B64c *15/06*
U.S. Cl. 239—265.39 **14 Claims**



A thrust nozzle at a tapering fuselage or nacelle tail section of an aircraft which is located downstream and adjoins an afterburner tailpipe of a turbojet engine, the exhaust gas discharge cross section of the nozzle can be adjusted by means of nozzle flaps which are pivotal about axes disposed transversely to the flow direction of the engine exhaust gases; the flaps are adapted to be actuated by an axially displaceable shroud which includes one or more tapering sections adapted to be extended out of the engine cowling for increasing the exhaust gas discharge cross section, to engage in recesses provided in the nozzle flaps.

3,638,863

SPRINKLER UNIT

James C. Roberts, 1860 Jeffrey, Escondido, Calif.

Filed Jan. 25, 1971, Ser. No. 109,374
Int. Cl. A62c *31/22*
U.S. Cl. 239—276 **5 Claims**

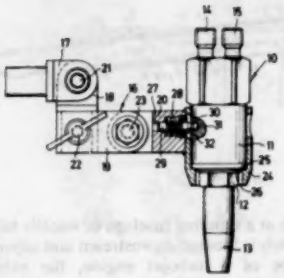
A sprinkler unit comprising a one-piece peglike element, which is inserted in the ground at the desired location. The upper end of the unit has a plug that fits into a water supply hose and the plug has a restricted channel that directs a stream of water against a platform that is open at one side and has angled walls to direct the spray out over a controlled area.

3,638,864

TORCH HOLDING LATCHING ARRANGEMENT

Georg Roeder, Frankfurt/Main, and Heinz Ginsberg, Ruppertshain/Taunus, both of Germany, assignors to Messer Griesheim GmbH, Frankfurt/Main, Germany

Filed May 8, 1970, Ser. No. 35,845
Claims priority, application Germany, June 6, 1969, P 19 28 851.8
Int. Cl. B05b *15/06*
U.S. Cl. 239—280.5 6 Claims



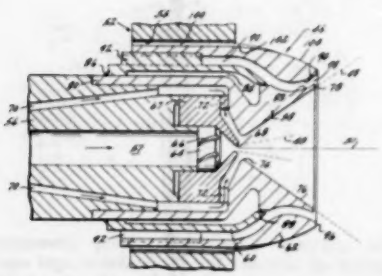
A holding arrangement for multiple machine cutting torches has a holder for each torch that includes a sleeve receiving the body of the torch; and latching means are provided between the holder and the torch body releasably latching the torch in an operating position.

3,638,865

FUEL SPRAY NOZZLE

Gregory E. McEneny, and Edward E. Ekstedt, both of Cincinnati, Ohio, assignors to General Electric Company

Filed Aug. 31, 1970, Ser. No. 68,194
Int. Cl. B05b *7/06*
U.S. Cl. 239—424 5 Claims



A fuel spray nozzle for delivery of a conical spray of fuel droplets into a gas turbine engine combustion apparatus includes a shrouded and shielded discharge head arranged to establish a stable fuel spray angle, maintain low-operating temperatures and prevent accumulations of deleterious matter on the surfaces of the nozzle which are exposed to the combustion process.

3,638,866

NOZZLE FOR MOUTH-FLUSHING APPARATUS

Robert J. Walker, 2942 Linden Ave., Berkeley, Calif.

Original application Aug. 17, 1966, Ser. No. 572,966, now Patent No. 3,507,275, dated Apr. 21, 1970. Divided and this application Jan. 23, 1970, Ser. No. 5,422
Int. Cl. B05b *1/26*
U.S. Cl. 239—544 5 Claims

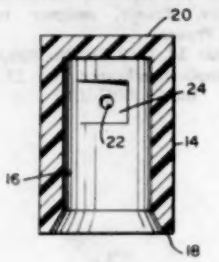
Apparatus and method for flushing the teeth and gum tissues with a moving stream of water to remove debris therefrom. The apparatus includes a nozzle with a plurality of angularly related supply passages converging at a single orifice through which such stream of water discharges. The stream cyclically and repetitively traverses a path of travel while the orifice remains in a fixed position because of changes in the relative volumetric flows of water through the supply passages.

3,638,867

VARIABLE DISCHARGE AEROSOL SPRAY NOZZLE

Frank Venus, Jr., Watertown, Conn., assignor to The Risdon Manufacturing Company, Naugatuck, Conn.

Filed Sept. 14, 1970, Ser. No. 71,979
Int. Cl. B05b *1/32*
U.S. Cl. 239—573 8 Claims



A spray nozzle is disclosed for a fluid dispenser, consisting of a button mounted on the end of a product discharge tube or valve stem of the dispenser. The button has a discharge orifice through which the fluid product is sprayed, and the button and stem are formed in their mating surfaces to provide a variable restriction to discharge of fluid from the orifice in different relative rotated positions of the button on the stem.

3,638,868

PULP GRINDING MACHINE HAVING A TAPERED CONTROL ROLL

Piero Bersano, Torino, Italy, assignor to Norton Company, Worcester, Mass.

Filed Apr. 23, 1969, Ser. No. 818,602
Int. Cl. B02c *11/08*
U.S. Cl. 241—44 13 Claims

A log-grinding apparatus and process for making pulp including an improved process and log-grinding machine for

compressing and releasing of pressure on the surface of a log in the presence of fluid to cause the natural lignin and resin fiber binders to be softened and dissolved whereby excellent wood fiber or pulp is formed and then readily separated from the log by a grinding roll. The log is rotatably driven through the machine lengthwise by the interaction of a group of angularly spaced rolls bearing upon the periphery of the log while

liquid is applied to the log. The rollers engage the surface of the log at spaced points around the periphery thereof to apply pressure and squeeze fluid out of the log's surface and when pressure is released fluids are absorbed into the log's surface so that fluid is flushed in and out of the wood so that the fibers are thereafter easily separated from the log by the grinding roll that engages the log progressively from end-to-end.

3,638,869

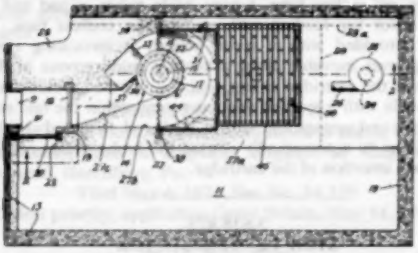
SEWAGE COMMINUTOR INSTALLATION

Lawrence C. Zimmerman, Harrisburg, Pa., assignor to F. B. Leopold Company, Inc., Zelienople, Pa.

Filed July 13, 1970, Ser. No. 54,532

Int. Cl. B02c *13/282*

U.S. Cl. 241—46 **12 Claims**



A basin and housing structure is disclosed for use with a generally cylindrical comminutor rotatable about an upright axis. The comminutor housing is generally scroll shaped to define a flow passage of progressively diminishing width wrapped around the cylindrical comminutor, and at least a major portion of the comminutor housing comprises a wall structure which is removable so as to provide improved or increased access to the comminutor and thereby facilitate maintenance and service work, especially when replacing comminutor comb bars, shear bars and cutting teeth.

3,638,870

ROCK-CRUSHING MACHINE

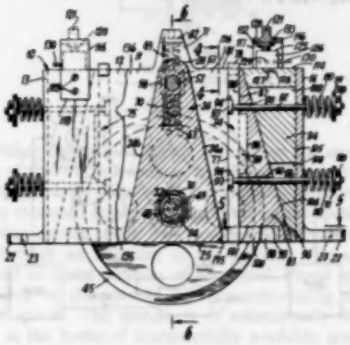
Ford Ferris, Staten Island, N.Y., assignor to David Bourne, Brooklyn, N.Y. and Gail C. Moore, Wyalusing, Pa., part interest to each

Filed Dec. 16, 1969, Ser. No. 885,564

Int. Cl. B02c *1/02*

U.S. Cl. 241—140 **4 Claims**

A rock-crushing machine having a rectangular frame open at its top and bottom. A wedge-shaped jaw crusher is mounted at its lower wide end on a drive shaft having end shaft extensions eccentric to the axis of the shaft and supported by the sides of the frame, the shaft extensions extending outwardly of the frame and each carrying a pulley. The jaw crusher is vertically centrally positioned in the frame and is mounted on an upper shaft for swinging movement about the axis thereof. The ends of the shaft extend through slots in the same sides of the frame and are mounted in bearing blocks, each supported by a spring above and below the same to provide a resiliently mounted floating support for the upper shaft. The jaw crusher occilates within the frame under the action of the eccentrically driven drive shaft. Opposite each inclined side of the jaw crusher is a vertical stationary jaw element each slidably supported by the frame sides and mounted on the rear of each jaw element is a horizontally



movable inner wedge also slidably supported by the frame sides. A coacting vertically movable outer wedge having a vertical side is in sliding engagement with an end sidewall of the frame. Upper and lower tie bolts extend through the vertical jaw elements and through the wedges and outwardly of the end sidewalls, each tie bolt carrying a compression coil spring engaging the end sidewall and a nut-held washer on the tie bolt. The outer wedges are each provided with elongated vertical slots through which the tie bolts extend. A ram at the top of each outer wedge is operative to effect a downward vertical movement thereof to move the stationary jaw element towards the side of the jaw crusher opposite thereto so as to narrow the gap therebetween. This adjustment of the size of the gap will control the size of the particles of the rock being crushed and discharged from the bottom of the frame.

3,638,871

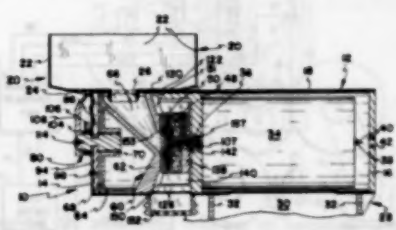
GRAIN GRINDER

Delos R. Barger, P.O. Box 221, Downey, Idaho

Filed May 14, 1970, Ser. No. 37,071

Int. Cl. B02c *7/06*

U.S. Cl. 241—255 **9 Claims**



A grain grinder having a rotor stone rotated by a power source and a stationary stator stone. The rotor stone has

novel tapered and spirally configurated grooves therein for evenly distributing grain about the rotor stone so that grinding takes place uniformly around the periphery of the stone. Novel external adjustment structure is provided to vary the clearance between the stator stone and the rotor stone so that various grains may be ground to a desired texture by selecting a position on an indicator or display device which visually displays the clearance set between the rotor stone and the stator stone.

3,638,872

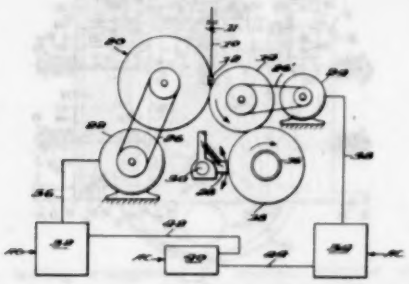
PROCESS FOR WINDING A YARN PACKAGE

Uel Duane Jennings, Signal Mountain, Tenn., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 28, 1968, Ser. No. 716,731

Int. Cl. B65h *54/38*

U.S. Cl. 242—18.1 **1 Claim**



A process for winding yarn into a cylindrical-bodied substantially straight-ended package wherein the yarn is traverse wound in layers of helical coils on a bobbin and the helix angles of the coils are cyclically varied from a minimum to a maximum and back to a minimum value during a spaced periodic excursion by periodically increasing the traverse rate to a value above that used for ribbon breaking. The maximum value of the helix angle in the excursion is greater than the maximum positive value used in the ribbon-breaking portion of the cycle. Thread line tension variations due to these wide variations in helix angles may be compensated for by periodically decreasing the rate of peripheral package winding speed coincidently with and proportional to the periodic increases in traverse rate.

3,638,873

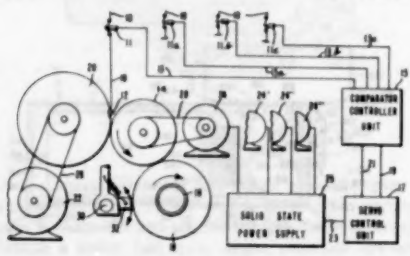
APPARATUS FOR WINDING YARN

Harold Wade Cole, Donelson, Tenn., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 12, 1970, Ser. No. 63,102

Int. Cl. B65h *59/38*

U.S. Cl. 242—45 **4 Claims**



A system to control yarn tension in a multiposition winding apparatus in which a plurality of tension transducers are associated with preselected yarn lines for generating output signals indicative of yarn tension. A comparator controller system is coupled to the transducers to process and combine the transducer output signals to provide an error signal. A control unit responsive to the error signal changes the output of the windup motor power supply which, in turn, changes motor speed and, consequently, yarn tension. Circuitry is provided to monitor the error signal and inactivate the control unit if the error signal exceeds predetermined limits.

3,638,874

REEL BRAKE FOR AN ENDLESS TAPE CARTRIDGE

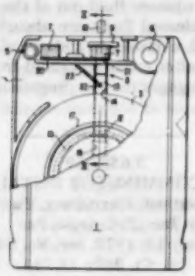
Nobuatsu Naito, Tokyo; Kasuhiko Nakajima, Fujisawa-Shi, and Yoshio Watanabe, Tokyo, all of Japan, assignors to Pioneer Electric Corporation and Apollon Music Industrial Corporation, both of Tokyo, Japan

Filed Oct. 13, 1969, Ser. No. 866,674

Claims priority, application Japan, Oct. 14, 1968, 43/88809

Int. Cl. B65h *17/48*

U.S. Cl. 242—55.19 A **4 Claims**



An endless tape cartridge which comprises a rotatable reel carrying an endless tape, a tape guide roller, a pad and a pinch roller for feeding and guiding the endless tape, is further provided with a spring-biased, reciprocating reel-braking lever movable along a keyway guide groove in the bottom of the cartridge casing, with one toothed arcuate end engageable with a toothed annular recess within the reel and the other end engageable with a push rod mounted on the tape player to automatically release the brake acting on the reel upon insertion of the cartridge.

3,638,875

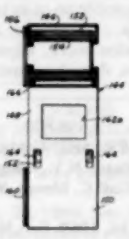
STRIP FILM PROJECTOR

Morris Schwartz; William Castedello, both of Plainville, Conn., and Edward K. Kaprelian, Mendham, N.J., assignors to The Kalart Company, Inc., Plainville, Conn.

Filed June 17, 1968, Ser. No. 737,697

Int. Cl. G03b *23/02, 21/00*

U.S. Cl. 242—71.2 **1 Claim**



A compact lightweight strip film projector in which the strip of still pictures is carried in a magazine attachable to

and detachable from the projector, and in which the film is rewound into its initial condition upon completion of projection by means of a power train driven by a motor in the projector. A film metering sprocket ends the rewinding step by stopping the motor after all film has been rewound. Projection is frame-by-frame and is accomplished manually or remotely through the action of the motor.

3,638,876

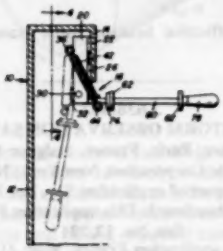
WATER SKI TOWROPE REEL

William W. Bullock, 1507 Ridgeway, Medford, Oreg.

Filed Mar. 9, 1967, Ser. No. 621,820. The portion of the term of the patent subsequent to Feb. 1, 1987, has been disclaimed.

Int. Cl. B65h *75/38, 75/40*

U.S. Cl. 242—106 **5 Claims**



A winding reel assembly including a rotatable winding member including appreciably different major and minor dimensions in right angularly disposed directions in a plane extending generally normal to the axis of rotation of the winding member and a mounting assembly for the winding member whereby its axis of rotation may be angularly displaced approximately 90° or a greater or lesser amount as desired.

3,638,877

DEREELING APPARATUS

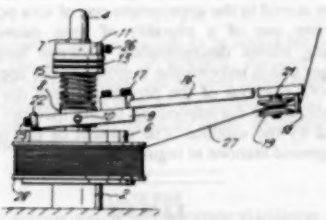
Donald George Clark, Bideford, and Derek J. Hicks, Woolfardisworthy, both of England, assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 4, 1970, Ser. No. 34,229

Claims priority, application Great Britain, May 14, 1969, 24,519/69

Int. Cl. B65h *49/00*

U.S. Cl. 242—128 **5 Claims**



Dereeling apparatus including a dereeling head and a floating plate adapted to pivot in response to force exerted through a dereeling arm, the pivotal movement of the plate serving to increase or decrease the frictional force on the spool of material being dereeled.

3,638,878

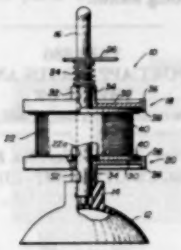
FISHING LINE SPOOL HOLDER

Heber L. Morris, 3591 Roslyn Ave., Kettering, Ohio

Filed Aug. 12, 1970, Ser. No. 63,160

Int. Cl. B65h *49/00*

U.S. Cl. 242—129.8 **10 Claims**



For holding fishing line spools in position for convenient dereeling of the line, a spindle is supported by a suction cup. The spool is slidably mounted on the spindle between a pair of slidably mounted retaining plates held on the spindle by a spiral spring coiled about the spindle and a retaining clip passing through an aperture in the spindle. The spring is compressed to resist rotation of the spool. Plural apertures are provided in the spindle for accommodating different lengths of spools. The spindle is of substantially the same diameter as the bores of commercially available spools and the retaining plates have hubs projecting from one surface thereof to provide bearings for spools having larger diameter bores.

3,638,879

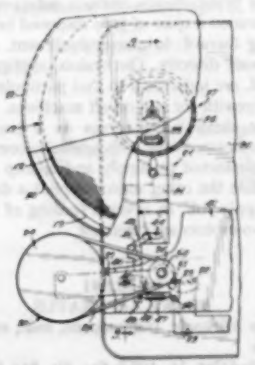
TAPE RECORDER THREADING CONTROL

Albert L. Eischen, Arlington Heights, Ill., assignor to Warwick Electronics Inc.

Filed Feb. 24, 1969, Ser. No. 801,702

Int. Cl. G11b *15/32, 15/66*

U.S. Cl. 242—192 **14 Claims**



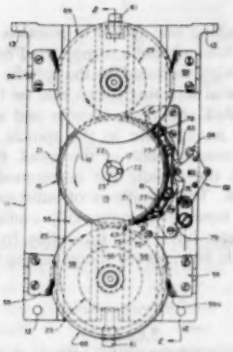
Mechanism for effectively braking, or retarding, a tape supply reel, such as in a tape supply cartridge, to prevent tearing or deformation of the tape as may be caused in an automatic threading operation where the end portion of the tape is dereeled, indiscriminately bunched up, or otherwise

undesirably loose in the cartridge. The retarding operation is effected herein as a concomitant of the self-threading operation. A portion of the mechanism for effecting the self-threading operation also functions to effectively positively operate the retarding means to assure concurrent self-threading and supply reel retardation and to provide an improved initial feed of the tape in the self-threading operation. A connecting link is provided which is pivotally mounted to be responsive to the operation of the self-threading means for actuating the retarding means.

3,638,880
TAPE TRANSPORT APPARATUS AND CARTRIDGE THEREFOR

Ashley J. Hollingsworth, Atherton, Calif., assignor to Newell Industries Inc.

Filed Nov. 3, 1969, Ser. No. 873,283
Int. Cl. G11b *15/32, 23/10*
U.S. Cl. 242—192 **6 Claims**



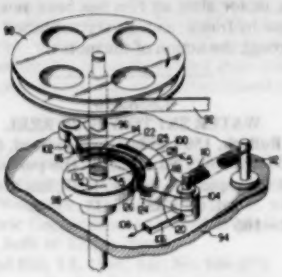
A tape transport wherein supply and takeup rolls are engaged by a resilient drive body disposed between the rolls, and urged against the rolls by means independent of the tape. Unidirectional brake means restrain rotation of the supply roll so as to tension a span of tape disposed between the rolls during feeding thereof. In one embodiment, a motor drives the rotating body directly. The brakes, applied at the hub of the supply roll, are individual to that particular supply roll to be carried therewith for use on all machines. In another embodiment, the drive body serves as a transfer roller to transfer forces between the rolls whereby one of two motors respectively connected to supply and takeup rolls drives the takeup roll while the other motor applies a drag to the rotation of the supply roll. In reverse feeding of tape, the functions of the two motors are reversed.

3,638,881
BRAKE APPARATUS

Ninko Tihomir Mirkovic, Indianapolis, Ind., assignor to RCA Corporation

Filed Oct. 16, 1969, Ser. No. 866,949
Int. Cl. B11b *15/32;* **G03b** *1/04*
U.S. Cl. 242—204 **5 Claims**

A braking arrangement wherein the amount of braking effected on a moving member is determined by the direction of movement of the braked member. Braking is applied to the member via a brakeshoe which is movably coupled to a lever means. In response to the contacting relation with the moving member, the brakeshoe is positioned along the lever means with respect to the fulcrum of the lever. The position of the brakeshoe with respect to the lever means fulcrum

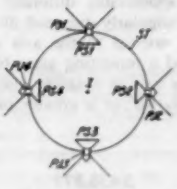


determines the effective braking force transmitted to the moving member.

3,638,882
THUNDERSTORM OBSERVATION SATELLITE

Jean Emile Turriere, Paris, France, assignor to International Standard Electric Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 712,102, Mar. 11, 1968, now abandoned. This application Feb. 19, 1970, Ser. No. 12,791
Claims priority, application France, Mar. 31, 1967, 100914
Int. Cl. B64g *1/00*
U.S. Cl. 244—1 SS **7 Claims**



This relates to equipment on board a spin-stabilized satellite for locating and counting lightning discharges. The discharges are detected by a plurality of $n \times n$ photocell matrices to deliver two quantized angles which define unambiguously the position of the discharge projected on the surface of the earth. The matrices effectively divide the earth surface into $2H \times 2H$ km. zones (H being equal to the altitude of the satellite) centered along the subsatellite great circle and each zone is quantized into $n \times n$ quadrilaterals. The angle values are processed to obtain coordinate values defining the quadrilateral where the discharges occurred. The coordinate value are stored in the appropriate one of $n \times n$ portions of the appropriate one of a plurality of zone memory. Further processing allows discrimination between long and short discharges which information is stored in the appropriate one of the $n \times n$ portions of the proper memory during the time the quadrilateral corresponding to the memory portion was observed by the satellite. The content of the memories are sent to ground stations at regular intervals.

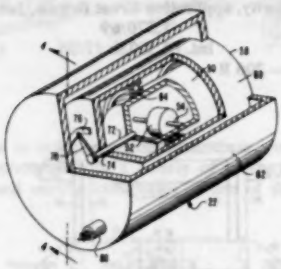
3,638,883
CROSS-RATE AXIS SENSOR

Andre Lanzaro, Albany, Calif., assignor to Dynasciences Corporation, Blue Bell, Pa.

Filed May 21, 1968, Ser. No. 730,776
Int. Cl. B64g *1/00*
U.S. Cl. 244—1 **11 Claims**

A cross-rate axis sensor is provided for use with a moving vehicle, such as an elongated space vehicle, which undergoes

both spinning and coning motion. The sensor which may be rotatably mounted about the longitudinal axis of the vehicle continually aligns itself with the instantaneous direction of transverse angular velocity or cross-rate axis of the vehicle due to coning motion, and the angular position of the rotatable sensor relative to the vehicle can be used to phase the torques provided by a thrust-producing nozzle mounted on the vehicle to reduce and eventually eliminate the coning



motion. The sensor includes a rotatively driven momentum wheel, the axis of rotation of which continuously follows the cross-rate axis, and a cylindrical member rotatably mounted about an axis parallel to the vehicle axis of the elongation within the vehicle and having a hollow interior within which the momentum wheel is rotatably mounted as a gyroscope element in a balanced single degree of freedom gimbal system.

3,638,884

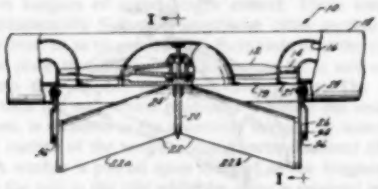
THRUST VECTORING LOUVER CASCADE

Eugene L. Timperman, Cincinnati, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force

Filed Sept. 15, 1969, Ser. No. 862,627

Int. Cl. B64c *15/08*

U.S. Cl. 244—12 D **2 Claims**



A thrust vectoring louver cascade is provided for a lift fan employed in the propulsion of V/STOL Aircraft. The V-shaped louvers of the cascade are pivoted about their apexes to provide increased mass flow of the propulsive gas stream, particularly when it is vectored to angle its output thrust from the vertical.

3,638,885

LAG FREQUENCY SELECTIVE DAMPER

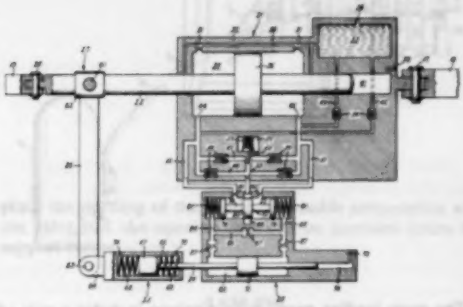
Donald A. Reed, Springfield, Pa., assignor to The Boeing Company, Seattle, Wash.

Filed Mar. 9, 1970, Ser. No. 17,554

Int. Cl. B64c *27/42*

U.S. Cl. 244—17.27 **11 Claims**

A frequency selective damper for damping the low frequency natural lead-lag vibrations of an articulated helicopter rotor blade while leaving essentially unaffected the induced one per revolution frequency motion when the rotor is subjected to the combination of these motions. The damper comprises a hydraulic cylinder, a metering-type load valve connected via flow paths to either side of the cylinder piston, a three-way spool valve connected via flow paths to the load valve and to the flow paths connecting the load valve and the hydraulic cylinder, and a control cylinder connected mechanically to the piston rod of the hydraulic cylinder and via flow paths with the spool valve. The displacement of the valve spool is proportional to the time integral of the displacement of the hydraulic cylinder piston. Consequently, when the hydraulic piston rod velocity and the valve spool displacement are both in the extended or retracted mode or sense, the fluid displaced by the hydraulic piston is forced across the load valve. If, however, the piston rod velocity and valve spool displacement are in the opposite sense, the spool valve provides a low resistance bypass around the load valve. This selective bypass provides improved low frequency damping when the damper is subjected to the combined natural and forced vibratory motion.



3,638,886

WING WITH SLOTTED FLAP MOUNTED AT THE LEADING EDGE AND/OR AT THE TRAILING EDGE

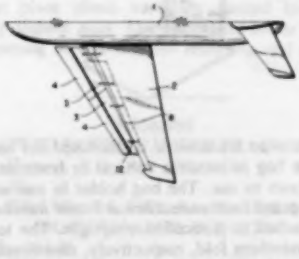
Herbert Zimmer, Friedrichshafen, Germany, assignor to Dornier G.m.b.H., Friedrichshafen, Bodensee, Germany

Filed Feb. 9, 1970, Ser. No. 9,790

Claims priority, application Germany, Apr. 5, 1969, P 19 17 532.7

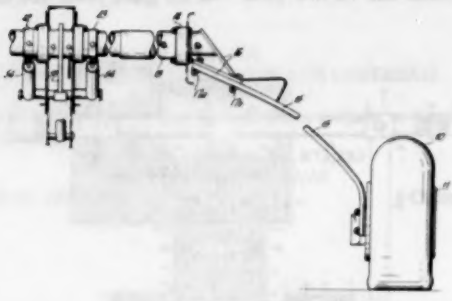
Int. Cl. B64c *9/14*

U.S. Cl. 244—42 D **3 Claims**



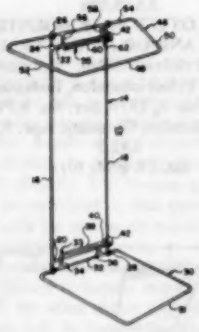
This invention relates to a slotted flap adapted to be mounted on at least one edge of a wing and adapted to be pivoted outwardly therefrom, comprising a first portion positioned uppermost in the retracted condition, and a second lower portion mounted on said first portion for pivotal movement about the outer edge of said first portion, both portions constituting independent slotted flaps in the extended condition thereof.

3,638,887
AIRPLANE RETRACTABLE LANDING GEAR
David B. Thurston, Springvale, Maine, assignor to Thurston Aircraft Corporation, Sanford, Maine
Filed Oct. 21, 1969, Ser. No. 867,998
Int. Cl. B64c *25/14*
U.S. Cl. 244—102 SL 8 Claims



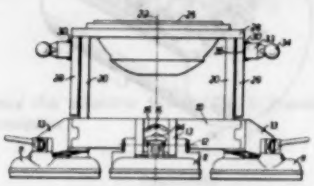
The main landing gear for an airplane includes a pair of retractable wheels. The wheels are retracted by hand operation of a lever. The landing gear mechanism also includes a pair of air cylinders and a release device which is operated to release the cylinders when the wheels are lowered in water.

3,638,888
LEAF BAG HOLDER
John A. Ross, Winthrop Harbor, Ill., assignor to Hall Industries, Inc., Chicago, Ill.
Filed Nov. 4, 1970, Ser. No. 86,855
Int. Cl. B65b *67/00*
U.S. Cl. 248—97 11 Claims



A foldable wire framework is disclosed for supporting a plastic refuse bag in either a vertical or horizontal attitude, which facilitates its use. The bag holder in one embodiment comprises top and bottom rectilinear frame members that are pivotally attached to a rectilinear upright. The top and bottom frame members fold, respectively, downwardly and upwardly flat against the back side of the upright member for convenient storage. The holder is adapted to support a plastic bag in such a manner that it can be laid on its side with the upright member upon the ground whereby the opening of the bag is in a convenient position to receive leaves and debris that are swept into the opening. The holder is lightweight and after a portion of debris has been swept therein the top frame functions as a handle by which to raise the entire holder and bag to a vertical position and allow the debris to fall to the bottom of the bag.

3,638,889
MOUNTING BRACKETS FOR CAMERAS AND OTHER OPTICAL INSTRUMENTS
David W. Samuelson, London, England, assignor to Samuelson Film Service Limited, London, England
Filed Dec. 23, 1969, Ser. No. 887,618
Claims priority, application Great Britain, Jan. 10, 1969, 1,570/69
Int. Cl. G03b *17/56*
U.S. Cl. 248—206 R 2 Claims



The invention relates to an adjustable mounting bracket for a photographic or television camera or other optical instrument designed to enable the instrument to be supported on any vertical inclined or horizontal surface whether flat or curved, for the purpose of sighting or shooting.

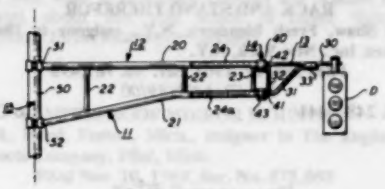
3,638,890
HOLDER FOR A HANDBAG AND COMPLEMENTARY WEARING APPAREL
Dean Wm. Burrell, 35 Jefferson St., and Addie M. Burell, 65 Elizabeth St., both of Ellicottville, N.Y.
Filed June 3, 1970, Ser. No. 42,993
Int. Cl. A47j *51/08*
U.S. Cl. 248—215 4 Claims

A holder including an arcuate band portion having raised portions along the curved marginal edges thereof for supporting the handle of a handbag; a crossbar portion joining the ends of the band portion for supporting a piece of wearing apparel, such as a scarf; and a suspending hook portion extending upwardly from adjacent a curved marginal edge of and overlying the center of the band portion.

3,638,891
ADJUSTABLE SUPPORT ARM STRUCTURE
Francis G. Schlosser, Ridgefield Park, N.J., assignor to Pfaff & Kendall, Newark, N.J.
Filed Feb. 19, 1970, Ser. No. 12,616
Int. Cl. E04h *12/00*
U.S. Cl. 248—221 4 Claims

An adjustable support arm structure, for adjustable extension of a support arm in a frame, such as an adjustable arm

or arms supporting a device on the outwardly extending end thereof, having novel structural features permitting simplified, convenient and efficient adjustment and extension of



said structure in order to accommodate use with equal efficiency in connection with a variety of products of various dimensions and various conditions of use of the supported device.

3,638,892

FASTENING CLIP INTENDED TO BE FASTENED WITH NAIL-DRIVING TOOL

Erhard Boye, and Eric Landin, both of Gunnebobruk, Sweden, assignors to Gunnebo Bruks Aktiebolag, Gunnebobruk, Sweden

Filed June 12, 1969, Ser. No. 832,632
Claims priority, application Sweden, July 18, 1968, 9841/68
Int. Cl. F16l *3/00*
U.S. Cl. 248—300 4 Claims

A fastening clip for fastening wires, pipes, etc. to a support comprises a plate including an opening from the edges of which two tongues of equal length extend. These tongues have a substantially S-shaped lengthwise cross section and are partly bent so as to extend with their ends over the opening in the plate thereby forming a passage for a nail to be driven into the support by a nail-driving gun. The clip, together with the nail which protrudes between the ends of the tongues, is retained in the muzzle of the gun by matching the outer outline of the tongues to the inner diameter of the muzzle. A washer is placed upon the end of the tongues for steadying the nail in the clip while the same is retained in the muzzle. The washer also serves to flatten the tongues against the support with the head of the nail pressing against the washer when the gun is fired.

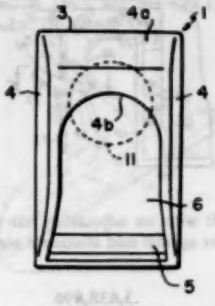
3,638,893

MULTIPURPOSE HOLDER FOR BOTTLES

Gertrud Wendland, Neckarsteinacher Str. 58, Hirschhorn, Germany

Filed May 4, 1970, Ser. No. 34,207
Claims priority, application Germany, May 7, 1969, P 19 23 332.0
Int. Cl. A47j *45/04*
U.S. Cl. 248—312 11 Claims

A multipurpose holder for bottles having a base support and a housing releasably attached thereto. The housing has a frontal opening cooperating with an extended opening in the base support. An elastic valve ball is rotatably mounted to sidewalls of the base support so that a part of the valve ball is accessible through said openings. A support means is positioned below the valve ball to hold a neck of a bottle and



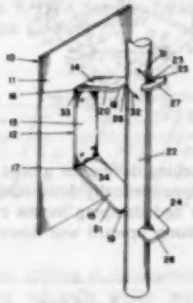
place the opening of the bottle in closable cooperation with the valve ball. An opening claw can be provided below the support means.

3,638,894

TEMPORARY SIGN BRACKETS

Nicolas W. Leutenegger, 2334-15th Ave., Monroe, Wis.

Filed June 22, 1970, Ser. No. 48,406
Int. Cl. G09f *17/00*
U.S. Cl. 248—221 2 Claims



A sign bracket for temporarily hanging a sign board on a substantially upright post. The bracket has upper and lower panels that pivot about vertically spaced hinges having horizontally aligned axes. The upper and lower panels have recesses opening to one side for receiving and gripping the post.

3,638,895

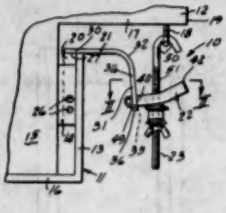
SPEED MOUNT CAMPER BRACKET

Samuel H. Henson, P.O. Box 488, 1201 W. Prospect St., Kewanee, Ill.

Filed Mar. 24, 1970, Ser. No. 22,242
Int. Cl. B60p *3/32*; B65j *1/22*
U.S. Cl. 248—361 R 9 Claims

A bracket for attaching camper bodies to stake pocket equipped truck beds, wherein the bracket includes a portion fitting into the stake pocket of the truck having an outwardly and downwardly extending plate attached at the top thereof, a bore at the outer end of said plate and a hook-receiving member projecting outwardly from said plate pivotably attached thereto through said bore, the hook-receiving member having an angled abutment surface for contacting a

portion of the hook assembly and an elongated slot therethrough normal to said surface, the hook assembly including a J-bolt with an adjustable nut for enclamping an abutment washer against said abutment surface.

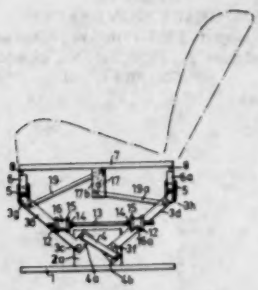


3,638,896

SHOCK ABSORBING DEVICE FOR A BOAT SEAT

John Werner Lindstrom, Rockneby, Sweden

Filed May 19, 1970, Ser. No. 38,732
Claims priority, application Sweden, May 22, 1969, 7227
Int. Cl. F16m *13/00*
U.S. Cl. 248—399 3 Claims



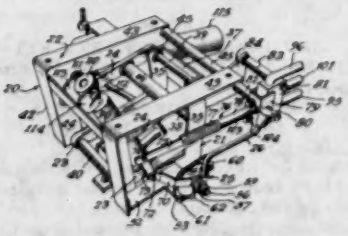
A shock absorbing device for a boat seat supported by a link system to move vertically downwardly against the action of spring means and damping means cooperating with the link system to damp upward and downward movements of the seat.

3,638,897

ELEVATION-ADJUSTING ASSEMBLY FOR SEAT

Arthur J. Harder, Jr., Franklin Park, and Raymond A. Bilancia, Palatine, both of Ill., assignors to Coach and Car Equipment Corporation, Elk Grove Village, Ill.

Filed Nov. 13, 1969, Ser. No. 876,397
Int. Cl. B60n *1/02*
U.S. Cl. 248—400 24 Claims



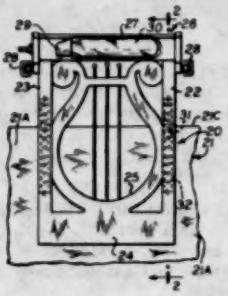
Seat for vehicle operator is mounted on an assembly which automatically moves seat vertically to a selected elevation corresponding to a setting on an elevation selector. Seat is automatically maintained at the selected elevation regardless of changes in the external load on the platform.

3,638,898

RACK AND STAND THEREFOR

George Shaw, Fresh Meadows, N.Y., assignor to Illumino Devices, Inc., New York, N.Y.

Filed Dec. 27, 1968, Ser. No. 787,498
Int. Cl. A47b *19/00*
U.S. Cl. 248—441 16 Claims



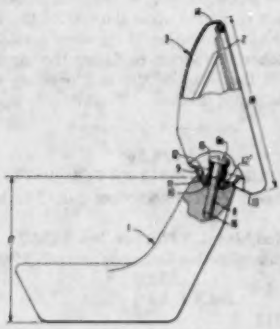
This disclosure is directed to a rack having detachably connected hangers to provide a two-point support for the rack on a suitable supporting surface with provision for adjusting the vertical height of the rack on such support. The rack is particularly constructed so as to be used independently or in combination with a stand, and in which a lighting means is provided for illuminating sheet music or the like supported thereon.

3,638,899

OUTSIDE MIRROR FOR MOTOR VEHICLES

Herbert Bonisch, Darmsheim; Heinz Gaiser; Guntram Huber, and Erwin Kolle, all of Sindelfingen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Aug. 9, 1968, Ser. No. 751,519
Claims priority, application Germany, Aug. 11, 1967, P 16 30 338.1
Int. Cl. B60r *1/06*
U.S. Cl. 248—483 5 Claims



An outside mirror for motor vehicles which includes a base portion adapted to be secured at the vehicle body, in particu-

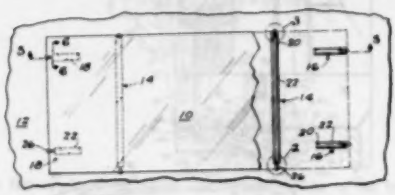
lar, to the outer wall of a front door, and a head portion that carries the mirror glass; the head portion is adjustably retained at the base portion at a place which is located on the side of the vehicle in relation to its vertical center axis, and is rotatable with respect to the base portion about an essentially vertical axis while a resistance opposes the relative rotary movement about this axis which is larger than the aerodynamic forces that occur normally.

3,638,900

TAMPERPROOF MIRROR MOUNTING

David A. Hard, Fenton, Mich., assignor to The Engineered Products Company, Flint, Mich.

Filed Nov. 10, 1969, Ser. No. 875,050
Int. Cl. A47f 7/14
U.S. Cl. 248—488 **1 Claim**



A tamperproof mirror mounting with vertically and horizontally extending channel sections adapted to underlie a mirror and be secured to a supporting wall with hooks attached to the channel sections and adapted to engage around the edges of the mirror. In mounting a rectangular mirror the hooks on two adjacent edges are fixedly attached to the channels. The hooks on the two opposed edges have legs with saw toothed abutments which are received by the channels and restrained from being removed by yieldably biased locking fingers on the channels

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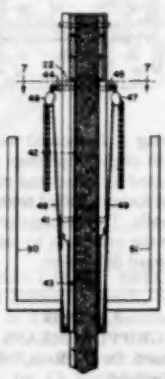
3,638,901

WALL FORM SYSTEM

Chester I. Williams, 347 Greenbriar S.E., Grand Rapids, Mich.

Filed Mar. 25, 1969, Ser. No. 810,251
Int. Cl. E04g 11/22
U.S. Cl. 249—20 **4 Claims**



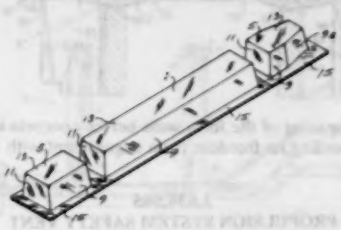
A form system based on a group of panels interconnected by junction beams preferably extending downward from the panels to form at least part of waler beam means normally secured to fastenings engaging the concrete. The junction beams have a cross section producing a ridge in the concrete intersected by the securing tie system holding the forms in position.

3,638,902

SYSTEM OF DOMES FOR USE IN MOLDING CONCRETE SLABS

Philipp O. Bergan, Box 747, Centralia, Ill.

Filed Nov. 24, 1969, Ser. No. 879,124
Int. Cl. E04g 11/40
U.S. Cl. 249—28 **14 Claims**



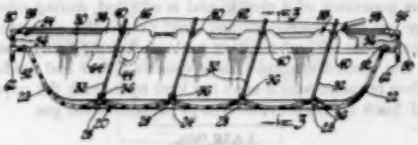
A system of domes for use in pouring voided (i.e., ribbed) concrete slabs comprising relatively short end domes for use at the ends of a span and two or three relatively long intermediate domes for use between two end domes, and involving a set of different length end domes and a set of different length intermediate domes adapted, by suitable combination of the lengths, to bridge spans in a series of lengths differing by an increment such as 6 inches or 1 foot.

3,638,903

FREEZING CONTAINER WITH SPILLGUARD

Joe P. Pietrzak, Kettering; Lewis B. Campbell, Miamisburg, and Robert M. Strahan, Dayton, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 9, 1970, Ser. No. 1,748
Int. Cl. F25c 1/24
U.S. Cl. 249—69 **3 Claims**



In the preferred form, spilling is diminished in a freezing container by providing sidewalls which are substantially upright at the top and extend downwardly and inwardly therefrom in a circular arc to the bottom wall of the container. The tops of the side and end walls are encircled with a continuous inturned U-shaped flange containing a large inwardly open groove having a width and height equal to about one-fifth the depth of the container.

3,638,904

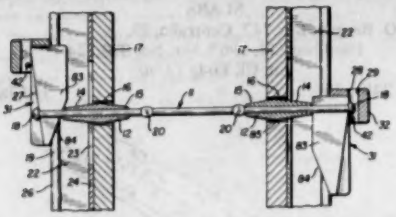
CONE ELEMENT FOR CONCRETE FORMS

James W. Franklin, Albuquerque, N. Mex.; David R. Wells, and Elmer H. Schell, both of Westminster, Colo., assignors to Form-Eze Systems, by said Wells

Continuation-in-part of application Ser. No. 563,011, June 11, 1966, now Patent No. 3,482,813, Continuation-in-part of application Ser. No. 511,480, Dec. 3, 1965. This application Apr. 14, 1969, Ser. No. 827,443
Int. Cl. E04g 17/06
U.S. Cl. 249—213 **5 Claims**

A cone-type device for use with form ties in concrete-forming systems to prevent escape of concrete and to facilitate form tie placing and form spacing operations. A cone device of size slightly smaller than the size of tie openings in the form elements is disposed on a form tie and is provided with a tapered end to facilitate introduction of said cones through the openings in the forms whereby the ties may be emplaced from a work station outside the form struc-

ture. The cone device is further used cooperatively with a form tie and a form lock as a spacer component to maintain

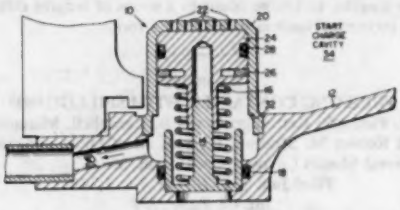


accurate spacing of the form walls before concrete is poured notwithstanding its freedom from engagement with the form walls.

3,638,905
PROPULSION SYSTEM SAFETY VENT

De Lacy F. Ferris, Van Nuys, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed June 17, 1970, Ser. No. 46,945
Int. Cl. F16k *35/00*
U.S. Cl. 251—94 **5 Claims**

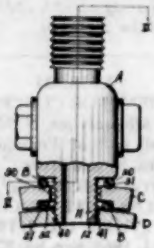


A spring loaded missile poppet valve is located adjacent the gas generator of a missile and is adapted, during missile storage, to vent overboard any fluid or gas the pressure of which exceeds the valve spring preload. During firing operations, the ignited starting charge creates a fuel and oxidizer expelling pressure which seals the vent by locking the poppet closed. Such action prevents loss of pressurization gas.

3,638,906
CORPORATION COCK FASTENING ARRANGEMENT

Shinkichi Yano, 137-1, Sakurazuka Dori, 7-chome, Toyonaka-shi, Osaka-fu, Japan

Filed May 13, 1969, Ser. No. 824,166
Int. Cl. F16k *51/00*; **F16l** *29/00*
U.S. Cl. 251—145 **3 Claims**

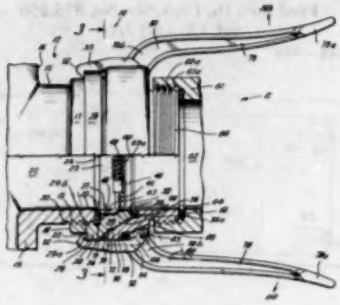


The externally threaded portion of the lower part of a corporation cock main body is screwed into a threaded hole bored in a part of a water-service pipe, with an annular packing of highly elastic material interposed under compression between the corporation cock main body and the water-service pipe, the repelling recovering elasticity of said annular packing serving to firm the fastening of the corporation cock to the water-service pipe and prevent leakage of water through the threaded connection.

3,638,907
QUICK COUPLING APPARATUS

Harold R. Graham, Houston, and Gerald A. Graham, Smith County, both of Tex., assignors to said Raymond L. Graham, by said Gerald A. Graham

Filed Oct. 10, 1969, Ser. No. 865,393
Int. Cl. F16l *29/00*
U.S. Cl. 251—148 **3 Claims**

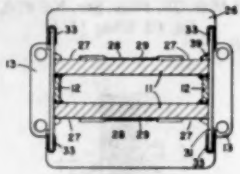


An assembly, including a male member for receiving a coupling latch mechanism mounted with a female member and a valve means mounted with the male member responsive to pressure to thereby open the valve means to enable fluids or gases to flow therethrough.

3,638,908
GATE VALVE BODY RIB REINFORCEMENT

Marvin H. Grove, Houston, Tex., assignor to M&J Valve Company, Houston, Tex.

Filed Apr. 29, 1970, Ser. No. 33,012
Int. Cl. F16k *27/04*
U.S. Cl. 251—329 **3 Claims**



A gate valve having a fabricated body comprising flat parallel end walls with aligned openings (i.e., flow passages) adapted to be connected to associated piping. The end walls are reinforced against forces applied to the piping which tend to deflect the end walls. The reinforcement consists of ribs which are applied to the end walls to reinforce them against both outward and inward deflection.

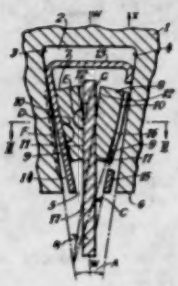
3,638,909
GRIPPING MEANS

Herbert Oliver Richard Dew, "Ross," George Street, Hintlesham, Ipswich, England

Filed Nov. 13, 1970, Ser. No. 89,386
Int. Cl. E21b *19/00*
U.S. Cl. 254—29 A **23 Claims**

In a gripping means comprising a gripping jaw, or a pair of gripping jaws, mounted in a slot in a support means, said slot having an open mouth into which an object to be gripped can be entered for engagement by the gripping jaw or jaws and

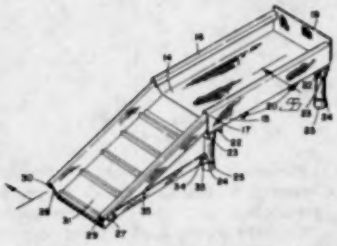
opposed plane walls converging towards said open mouth, the or each gripping jaw has an inwardly facing surface comprising inner and outer portions inclined to one another at an obtuse angle and an outwardly facing surface comprising inner and outer portions also inclined to one another at an obtuse angle such that the gripping jaw has the inner portion of its inwardly facing surface inclined to the outer portion of its outwardly facing surface at an angle B which is smaller



than the angle C between the outer portion of its inwardly facing surface and the inner portion of its outwardly facing surface and spring means is provided normally urging the outer portion of the inwardly facing surface of the or each gripping jaw in a direction towards the object to be gripped.

The gripping means is particularly suitable for use in withdrawing piles from the ground. It may also be used in quick-release shackles and tensioning devices.

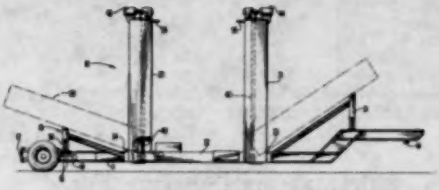
3,638,910
CAR WHEEL SUPPORT
Guy I. Nellis, and Eugene E. Wiesenhofer, both of Phoenix, Ariz., assignors to said Nellis, by said Wiesenhofer
Filed June 1, 1970, Ser. No. 41,990
Int. Cl. B66f *19/00*
U.S. Cl. 254—88 **4 Claims**



A compact telescopic lightweight car wheel support.

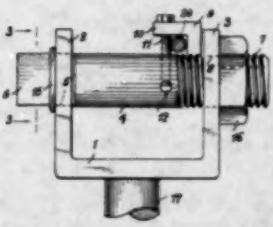
3,638,911
ASPHALT PLANT ERECTOR
Erbie G. Mize, and James D. Brock, both of Chattanooga, Tenn., assignors to CMI Corporation, Oklahoma City, Okla.
Filed Feb. 6, 1970, Ser. No. 9,171
Int. Cl. B66f *7/12*
U.S. Cl. 254—89 R **7 Claims**

An erector system and apparatus for erecting sectional asphalt plants, or the like. A wheeled support frame is positioned at the plant site and lowered into contact with the ground surface. Four support legs are moved from inclined traveling positions on the framework to upright spaced rectangular positions. A pair of parallel horizontal lifting beams are connected at their ends to the lower ends of the support legs. A series of wheeled plant sections are sequentially moved laterally across the framework across the lifting beams and the lifting beams and the plant sections are sequentially raised to the upper ends of the support legs to support the lowermost plant section. The process is repeated until all of the plant sections have been assembled and raised



whereupon plant support legs are positioned beneath the lowermost plant section and the assembly is lowered to rest upon the plant support legs. The framework support legs are then lowered to their inclined positions, the framework raised back onto its wheels, and the framework and its related apparatus is then moved from beneath the assembled plant.

3,638,912
TENSIONING DEVICE FOR GUY WIRES
Albert M. Moreno, 2601 Sea Island Dr., Fort Lauderdale, Fla.
Filed May 25, 1970, Ser. No. 40,313
Int. Cl. B66f *13/00*
U.S. Cl. 254—161 **3 Claims**

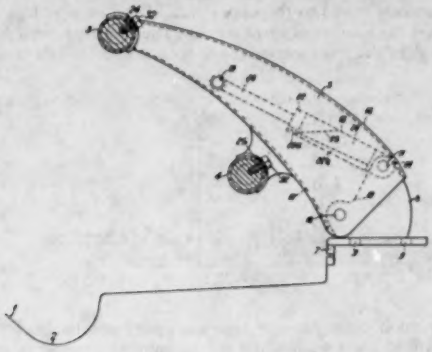


A tensioning device for guy wires, cables and the like consisting of a substantially U-shaped bracket holding a spindle or bolt which is both rotatively and axially movable in the legs of the bracket. A nonround or square opening in one of the legs of the bracket normally engages a complementary nonround or square part of the spindle and prevents the spindle from normally turning. The spindle or bolt, when axially and manually moved, causes the nonround portion of it to be shifted out of the nonround opening in the bracket and the spindle can then be turned to wind up the guy wire upon it to the extent necessary to bring the wire to the required tension. A bracket mounted on the spindle carries a screw which engages the bracket and causes the same to clampingly hold the wire attached to the spindle or bolt.

3,638,913
HIGHWAY GUARDRAIL DEVICES
Gunter Persicke, Dartford, England, assignor to Christiani & Nielsen Limited, London, England
Filed Jan. 19, 1970, Ser. No. 3,837
Int. Cl. E01f *15/00*
U.S. Cl. 256—13.1 **9 Claims**

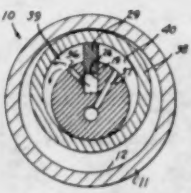
A guardrail support comprising a ground anchor with a bracket pivoted at one end thereto, at least two guardrail

connectors secured one to the free end of the bracket and the other between the ends of the bracket, and a resilient device between the anchor and bracket to maintain the



bracket at rest supporting the rails by the connectors with the upper rail closer to the highway than the lower rail and an impact of a vehicle from the highway permitting upward movement of the bracket and the rails.

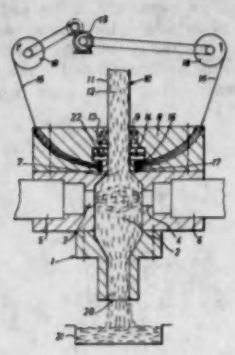
3,638,914
ROTATING PNEUMATIC VIBRATOR
Theodore S. Wadensten, 26 Snyder Ave., Ramsey, N.J.
Filed June 2, 1970, Ser. No. 42,791
Int. Cl. B01f *11/00*
U.S. Cl. 259—1 R **6 Claims**



A rotating pneumatic vibrator in which a cylindrical housing is provided with an axial shaft spaced inwardly from the walls of the housing to provide a circular space between the shaft and the housing. A cylindrical rotor having a diameter greater than the shaft and smaller than the housing is mounted on the shaft for movement thereabout. A longitudinally extending radially moveable vane is mounted in the shaft and is arranged to be pneumatically pressed against the rotor. Air forces the vane against the rotor and escapes into the chamber formed between the shaft and the rotor; the air forces the rotor to move about the shaft and then escapes to the atmosphere with the rotor and vane returned to their beginning point. The motion is continuous and produces vibrations due to the movement of the rotor on the shaft.

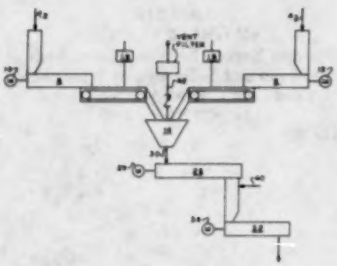
3,638,915
APPARATUS FOR INTRODUCING SUBSTANCES INTO A FOAMABLE MIXTURE FOR FORMING A FOAM MATERIAL
Karl Breer, Cologne, and Udo Lauterbach, Leverkusen, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Apr. 15, 1970, Ser. No. 28,700
Claims priority, application Germany, Apr. 26, 1969, P 19 21 387.7
Int. Cl. B01f *15/02*
U.S. Cl. 259—4 **10 Claims**

For supplying a foamable mixture for the production of foam material with fillers, these fillers are packed in a flexible tube. This packed tube is conveyed to the mixing chamber in form of an endless rod and the tube is removed



just before the fillers are introduced into the mixing chamber.

3,638,916
METHOD AND APPARATUS FOR BLENDING MATERIALS
Juan S. Ursic, Bogota, Colombia, and Cloral O. Rains, Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed Sept. 1, 1970, Ser. No. 68,641
Int. Cl. B01f *15/04*
U.S. Cl. 259—4 **5 Claims**

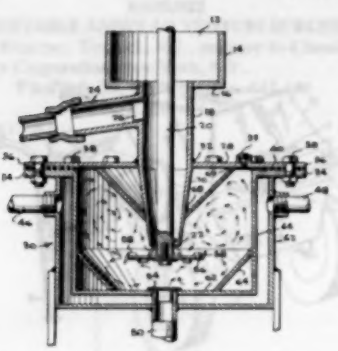


A blender continuously receives a plurality of components from material hoppers, continuously blends the components together at a preselected ratio, and discharges the blended material to a blended-material feeder which continuously discharges the blended material at a controlled rate to associated apparatus. The blended-material feeder is regulated to continuously discharge the blended material at a rate substantially equal to the summation of the rates of the material components entering the hopper.

3,638,917
METHOD AND APPARATUS FOR CONTINUOUSLY DISPERSING MATERIALS
James C. Osten, 317 Sleepy Hollow, Temple Terrace, Fla.
Filed June 18, 1969, Ser. No. 834,470
Int. Cl. B01f *7/16*
U.S. Cl. 259—8 **22 Claims**

The method and apparatus of continuous high-shear dispersion of materials such as paint pigments in conventional vehicles and the like comprising: establishing a rotating zone of high-shear action along a horizontal plane with a conventional high-shear agitator, continuous admitting below the plane a supply of materials to be dispersed, inducing the materials to enter the zone, forming a consistent dynamic es-

sentially curved laminar flow path for said materials after leaving the influence of said zone, repeating the influence of the high-shear action of said zone upon the same materials for a predetermined time to cause the materials to pass continuously through said path, confining the materials with the shape of the vessel to remain within said path to force said materials to repeatedly contact said zone, an outlet for



withdrawing a portion of said materials continuously from above said zone during the movement of said materials near said zone and prior to a reentry into said zone, whereby to provide highly dispersed materials having been subjected repeatedly to the action of said zone which controls the period of retention within the vessel by means of the location of the exit path and by controlling the input and withdrawing.

3,638,918

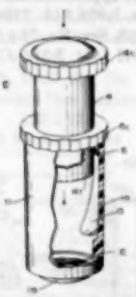
MIXING OF SUBSTANCES

Melvin Denholtz, Livingston, N.J., assignor to Dental Design Systems, East Orange, N.J.

Filed Mar. 9, 1970, Ser. No. 17,465

Int. Cl. B65d *25/08, 81/32;* **B01f** *3/12*

U.S. Cl. 259—48 **10 Claims**



Method and apparatus for the intermixing of substances using a capsule formed by a receptacle with an internal sack and a movable, desirably hollow plunger that acts tangentially against the sack.

The receptacle, illustratively of plastic, contains a first substance, such as a powder, and the sack, which is metallized to prevent loss of its contents, contains a second substance, such as a liquid. Illustratively, the liquid is monomer and the powder is a resin constituent. When the two substances are mixed, they produce a composite resin which may be used, for example, for dental fillings.

When the plunger, also of plastic, is depressed into the receptacle, it engages and squeezes the sack, expelling its contents into the receptacle, and thereafter sandwiches the sack between the plunger and a sidewall of the receptacle.

3,638,919

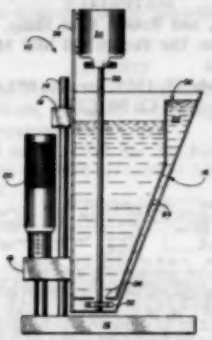
SLURRY AGITATOR

Larry K. Phipps, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 18, 1969, Ser. No. 850,874

Int. Cl. B01f *5/12*

U.S. Cl. 259—95 **2 Claims**



A slurry agitator includes a slurry container and an upwardly extending passageway. The passageway interconnects an opening at the bottom of the container and an open top positioned over the container. Slurry is continuously circulated through the passageway by a vane pump mounted in the passageway. The pump is driven by a motor mounted over the container. The motor is coupled to the pump by a shaft that extends through the opening. The position of the container is micrometer adjustable to control the position of slurry flowing out of the top of the passageway.

3,638,920

MATERIAL-MIXING APPARATUS

Ramsey H. Davis, 626 N. Nettleton, Bonner Springs, Kans.

Filed Nov. 27, 1970, Ser. No. 93,243

Int. Cl. B01f *7/04*

U.S. Cl. 259—104 **11 Claims**

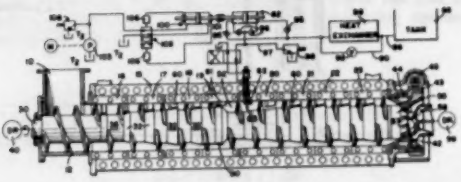
A material-mixing apparatus for mixing feeding ration includes an agitator rotatably mounted in a mixing chamber

and adapted to operate submerged beneath a mass of materials to be mixed and having a first plurality of upwardly and forwardly directed paddles and a second plurality of downwardly and rearwardly directed paddles and a screw conveyor adjacent each of opposed sidewalls of the mixing chamber with the screw conveyors being positioned at a higher level than the agitator and having edge portions of a flight thereof below an upper surface of the mass of materials. The agitator and the screw conveyors are rotated at different speeds to thoroughly blend the mass of materials within the mixing chamber.

3,638,921
APPARATUS FOR TREATING ELASTOMERIC MATERIALS

Dean K. Bredeson, and Robert Kent Slaby, both of Piqua, Ohio, assignors to The French Oil Mill Machinery Company, Piqua, Ohio

Filed Feb. 25, 1969, Ser. No. 802,029
Int. Cl. B01f *7/08*
U.S. Cl. 259—109 **3 Claims**

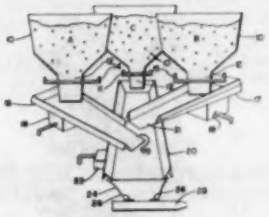


Apparatus for adding liquids such as oils to elastomeric materials such as rubber includes a continuous screw press with intermediate chambers where the material is worked under pressure. Liquid is supplied near the center of the chamber through injector bars, and is mixed into the material as it proceeds out of the chamber toward the press exit. The elastomeric materials may be first processed in the press to remove included moisture.

3,638,922
PROPORTIONATING BLENDER

Henry G. Guglietti, Fitchburg, Mass., assignor to Plastics Materials Systems, Inc., Fitchburg, Mass.

Filed Nov. 13, 1968, Ser. No. 775,265
Int. Cl. B28c *7/04*
U.S. Cl. 259—154 **11 Claims**

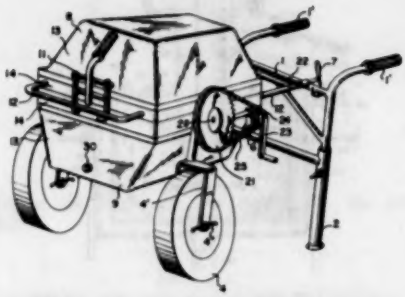


A blender is provided for proportionating and mixing fluid-particulate materials such as thermoplastic particles, wherein streams of material are dispensed from a plurality of hoppers to a plurality of vibrating channels, the channels converging to a final vibrating channel which blends all the materials.

3,638,923
MULTIPURPOSE CART AND MIXER

Pierre Pommier, 162 rue du Marechal Foch 95, Taverny, France

Filed Oct. 15, 1970, Ser. No. 80,940
Claims priority, application France, Feb. 11, 1970, 7004889; Oct. 16, 1969, 6935964
Int. Cl. B28c *5/18*
U.S. Cl. 259—177 **10 Claims**

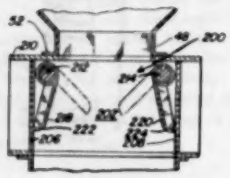


A cart having two coaxial wheels and two columns mounted on a frame supports a hopper consisting of two trough-shaped receptacles connected by releasable hinges, a latch, and a gasket. One of the troughs is rotatably mounted on the frame by trunnions and may be turned about the trunnion axis by bail handles provided on each trough or by a crank on the frame connected to one trunnion by a chain-and-sprocket drive. A removable partition in the container facilitates manual turning of the container by dividing the load.

3,638,924
SCRUBBERS WITH ADJUSTABLE VENTURIS

Ralph R. Calaceto, Ridgewood; Reuben H. Durst, Washington Township, Bergen County, and David Millar, Ridgewood, all of N.J., assignors to Slick Industrial Co., Summit, N.J., by said Calaceto and said Millar

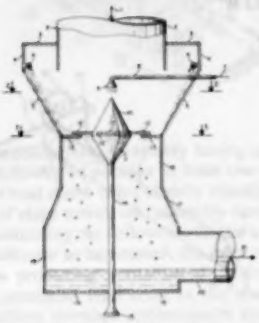
Continuation-in-part of application Ser. No. 620,383, Mar. 3, 1967, now Patent No. 3,405,918. This application Aug. 22, 1968, Ser. No. 754,559
Int. Cl. B01f *3/04*; **B01d** *47/10, 47/06*
U.S. Cl. 261—62 **1 Claim**



A gas scrubber having an adjustable Venturi throat which receives the gas which is to be cleaned and which also receives a liquid for cleaning the gas. The adjustable Venturi throat has a pair of inner straight parallel edges which extend perpendicularly with respect to the central axis of the Venturi and which are situated in a plane normal to the latter axis, these inner edges being equally and oppositely displaced by the adjustable Venturi to define the smallest throat area of the Venturi. This adjustable Venturi throat structure includes a pair of tiltable baffle plates having inner edges which define the inner edges of the Venturi throat and being equally and

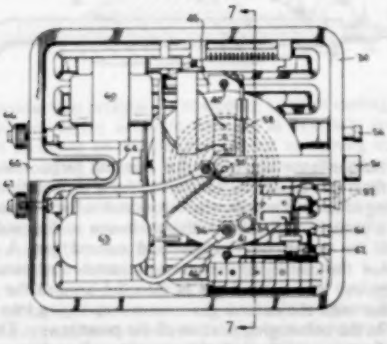
oppositely turnable about parallel turning axis which are also in a plane normal to the central Venturi axis. The liquid is supplied in sheets between which the gas flows centrally through the Venturi, so that the liquid is directed transversely across the gas at the Venturi throat with the accelerated gas bursting through the liquid so as to shatter it into minute droplets.

3,638,925
ADJUSTABLE ANNULAR VENTURI SCRUBBER
Frank C. Braemer, Teaneck, N.J., assignor to Chemical Construction Corporation, New York, N.Y.
Filed July 22, 1969, Ser. No. 843,444
Int. Cl. B01d *47/10*
U.S. Cl. 261—62 **9 Claims**



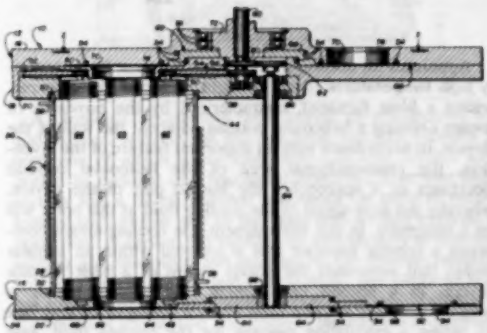
An annular venturi scrubber for scrubbing an impurity-laden gas stream with a liquid, in which spaced horizontal baffles are provided at the base of the central conical baffle and the lower extremity of the approach section, with the conical baffle being rotatable or adjustable about a vertical axis, so that the throat opening may be modified to compensate for changes in the gas flow rate.

3,638,926
HUMIDIFICATION
Alfred W. Melville, 255 Shirley Rd.; Frank W. Shacklock, 16 Watson Place, both of Papatoetoe, Auckland, and David H. O'Hare, 47 Litten Road, Howick, Auckland, all of New Zealand
Filed Sept. 26, 1968, Ser. No. 762,683
Claims priority, application New Zealand, Sept. 27, 1067, 150,212
Int. Cl. B01f *3/04*
U.S. Cl. 261—130 **15 Claims**



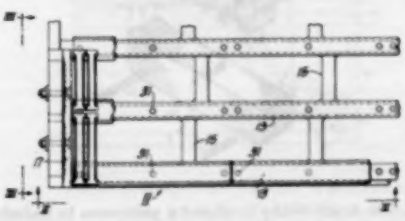
Humidification and heating apparatus preferably including a spirally wound resistance-heated plate with its axis vertical and one side in thermal contact with a sheet of water absorbent material. Both plate and material are partially immersed in water in a tank the lid of which is sealingly engaged with the spiral plate. When used for artificial respiration air from a respirator is admitted and discharged from the tank at points such that it must travel along the spiral passage formed by the plate, water surface and lid thus picking up heat and water vapor to emerge preferably substantially saturated at a temperature which does not exceed the maximum desired input temperature at the patient. To prevent condensation en route to the end user, sufficient further heat is imparted to balance that lost in passage. Preferably the interconnecting apparatus between the humidifier and patient is heated at least in portions along its length and preferably by electrically heated elements embedded in the wall of the usual flexible tube leading from the humidifier to the patient.

3,638,927
SLICE CONVEYOR FURNACE
Wallace Ogden Wells, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Aug. 1, 1969, Ser. No. 846,855
Int. Cl. F27b *9/14*; **F27d** *3/00*
U.S. Cl. 263—6 R **7 Claims**



In a continuous flow asher furnace, an organic material removing environment is continuously maintained in a furnace chamber. Integrated circuit slices are continuously transported through the environment by lead screws positioned within the chamber. Disks mounted at opposite ends of the chamber are periodically indexed to rotate individual slices into and out of the furnace.

3,638,928
PALLET HEAT RIB SHIELD
Hartman Mitchell, Pittsburgh, Pa., assignor to Koppers Company, Inc.
Filed Aug. 28, 1969, Ser. No. 853,652
Int. Cl. F27b *9/00, 21/02*
U.S. Cl. 263—28 **4 Claims**



The ribs of a pallet used in sintering machines and the like has loosely fitting heat shields arranged in spaced-apart rela-

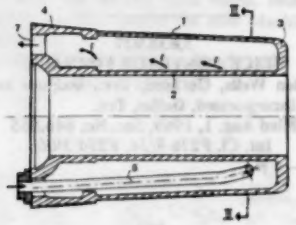
tion over the upper surface of the ribs, and such heat shields contact the pallet ribs only at selected spaced-apart locations.

3,638,929

DISCOVERY IN APPARATUS FOR COOLING A WALL SURFACE

Paul Brulhet, Nilvange, France, assignor to Societe Wendel-Sidelor, Societe Anonyme, Hayange, France

Filed May 11, 1970, Ser. No. 36,084
Claims priority, application France, May 14, 1969, 6915586
Int. Cl. F23m 5/08; C21b 7/16
U.S. Cl. 263—44 8 Claims



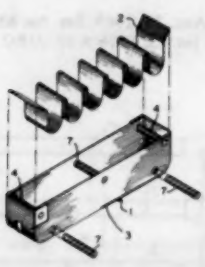
Apparatus for cooling a device that is exposed to extremely high temperatures (such as might be found, for example, within a blast furnace), characterized by the provision of means defining a helicoidal conduit adjacent the wall of the device. In accordance with an important feature of the invention, the cross-sectional area of the helicoidal conduit decreases as it approaches the hottest part of the device, whereby the flow speed of the cooling fluid at this point will be a maximum. In one embodiment, the cooling means comprises a tubular member that is inserted within an annular jacket that surrounds the nozzle means of a blast furnace tuyere. In a second embodiment, the cooling means is adapted for insertion in a blast furnace casing or cooling box to define a circulation passage for the cooling fluid, said passage including a helical outer supply portion arranged concentrically about an inner return portion.

3,638,930

REFRACTORY METAL BOAT FOR HEAT TREATING COILS

Halver Allen Hart, Jr., Waldoboro, Maine, assignor to Sylvania Electric Products Inc.

Filed Apr. 24, 1970, Ser. No. 31,559
Int. Cl. F27b 21/04; F27d 5/00
U.S. Cl. 263—47 R 5 Claims



A boat for heat treating refractory wire coils comprises a molybdenum enclosure having a corrugated molybdenum sheet attached therein to form an integral compartmentalized boat. The corrugated sheet is locked to the boat in such a manner as to permit thermal expansion thereof independently of the boat.

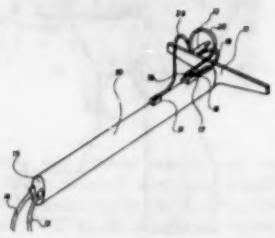
Each curved hollow of the corrugated sheet can contain a plurality of coils in such a manner as to prevent distortion thereof during heat treating.

3,638,931

PORTABLE HAND GUIDED CUTTING TORCH

Gerhardt Lange, Frankfurt am Main, Germany, assignor to Messer Griesheim GmbH, Frankfurt am Main, Germany

Filed Jan. 19, 1970, Ser. No. 3,831
Claims priority, application Germany, Feb. 11, 1969, P 19 06 732.4
Int. Cl. B23k 7/10
U.S. Cl. 266—23 R 11 Claims



A portable hand guided cutting torch comprising a handle, a guiding device connected to one end of the handle, a carriage carrying the torch and movable along the guiding device and a driving device connected to the carriage for driving same along the guiding device.

3,638,932

COMBINED BURNER-LANCE FOR FUME SUPPRESSION IN MOLTEN METALS

Anthony J. Masella, Chicago, and Edward A. Grobel, Mundelein, both of Ill., assignors to Chemetron Corporation, Chicago, Ill.

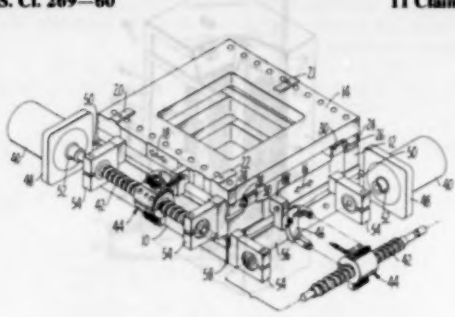
Filed Mar. 26, 1969, Ser. No. 810,727
Int. Cl. C21c 7/00
U.S. Cl. 266—34 L 1 Claim

A burner-lance apparatus for burning large volumes of fluid fuels and especially adapted to fume suppression during refining of molten metals wherein a double flared passageway with a straight wall section therebetween is disposed in the nozzle for intermixing oxygen and natural gas. A tubular member for conveying oxygen terminates upstream of the passageway and natural gas is directed around the tubular member with the natural gas stream converging into the oxygen in the converging portion of the passageway. The intermixed gases pass through the straight wall section and then expand in the second flared or divergent passageway.

3,638,933
PRECISION X-Y POSITIONING TABLE

Robert W. Burnette, Berkeley; Harold L. Hoffman, San Pablo, and Richard V. Lukes, El Cerito, all of Calif., assignors to Yosemite Laboratory

Filed Aug. 10, 1970, Ser. No. 69,510
Int. Cl. B23q 3/18
U.S. Cl. 269—60 11 Claims

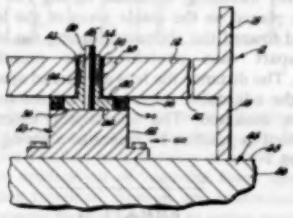


An X-Y positioning table assembly having a lead screw for advancing a follower to position at least one table or stage, the axis of the lead screw being slightly misaligned relative to the direction of stage travel, said assembly further comprising means interconnecting the follower with the table or stage as to allow the follower to be rotated, the axial misalignment of the lead screw producing a rotation of the follower to compensate for cumulative lead error in the lead screw. Additionally, a resilient member interconnects the follower with the table or stage, said member being vertically flexible to accommodate a slightly bowed lead screw and prevent a binding of parts in the positioning mechanism.

3,638,934
PRECISION POSITIONING TOOL

James Blum, Pasadena, Calif., and Robert P. Johnson, Pontiac, Mich., assignors to Bell & Howell Company, Chicago, Ill.

Original application Nov. 6, 1967, Ser. No. 680,830, now Patent No. 3,575,366. Divided and this application Mar. 3, 1970, Ser. No. 18,807
Int. Cl. B23q 3/18
U.S. Cl. 269—311 10 Claims

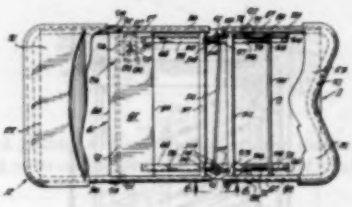


A production process for equipping a rough casting with a plurality of highly accurate surfaces at precisely predetermined locations on the casting without machining the casting. The casting includes a plurality of laterally spaced holes and is placed on a tool which supports a plurality of mounting bosses in the holes of the casting. The tool locates the bosses generally coaxial with the holes so that annular spaces are provided between the exterior of the bosses and the walls of the holes, which spaces are then filled with a bonding agent to secure the bosses to the casting. The tool positions selected faces of the bosses in desired relation to each other, preferably parallel to a reference surface defined by the tool. The tool seals an end of each annular space to prevent the bonding agent from flowing from the space as the agent cures. The tool comprises a rigid base such as, for example, granite on which are mounted fittings, each of which has a surface in a precisely predetermined position, and in a preferred embodiment the precisely positioned surfaces are in a common plane or a pair of parallel common planes. Each of these fittings receives one of the mounting bosses in engaging relation with the precisely positioned surface, and resiliently biases a seal around the mounting boss to seal the fluid bonding agent within the annular space.

3,638,935
PHYSICIAN'S EXAMINING TABLE CONSTRUCTION

Joseph J. Lelugas, Two Rivers, and Gene B. Lokken, Mishicot, both of Wis., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Aug. 29, 1969, Ser. No. 854,212
Int. Cl. A61g 13/00
U.S. Cl. 269—324 8 Claims

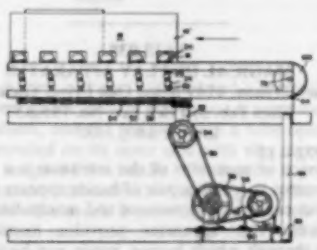


A physician's examining table having an upholstered top and cabinet, wherein the top has head and foot sections at least one of which is pivotable with said one section supported in inclined and horizontal positions. Said one head section has a frame member supported by support means located only at one side of the table and for this purpose is reinforced. A torsion bar having one end secured to said one section and the other end secured to the cabinet counterbalances the weight of said one section. The other section has support means comprising a support link which pivots on the frame of the section and engages the cabinet to hold the foot section in inclined positions.

3,638,936
METHOD FOR SEPARATING A BUNDLE OF PLURAL SHEETS

Charles H. Hart, Nazareth, Pa., and George R. Cashau, Philipsburg, N.J., assignors to American Newspaper Publishers Association Research Institute, Incorporated, Easton, Pa.

Filed Sept. 24, 1970, Ser. No. 75,099
Int. Cl. B65h 5/30
U.S. Cl. 270—57 8 Claims



Method of separating a bundle of plural sheets of material, such as a folded newspaper, including lineally advancing the

bundle in a vertical plane, rotatably grabbing the bottom edges of said bundle during said advancing, and pointedly probing the leading edge of said bundle at the top during said advancing so as to separate said sheets laterally from said vertical plane.

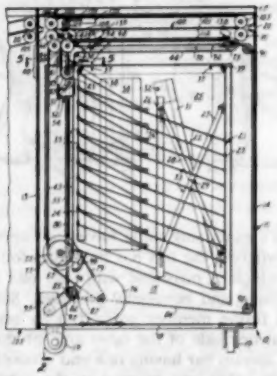
The method is particularly adapted to separating a printed newspaper prior to stuffing with inserts such as a TV guide, classified advertising, book review supplements, and the like.

3,638,937

COLLATOR

Leo J. Schulz, Woodbury Township, Washington County, and George L. Warner, Roseville, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 1, 1969, Ser. No. 862,791
Int. Cl. B65h *39/06*
U.S. Cl. 270—58 **10 Claims**



A collation distributor for use with a document-copying machine, a printer, stack feeder or the like which distributor is adapted to receive and collate sheets according to a predetermined pattern. The distributor comprises a plurality of shelves for receiving the copies, a conveyor of varying length for distributing sheets to the shelves of the receiver according to a predetermined pattern, and a transport conveyor which directs sheets fed the collating machine into the distributing conveyor or passes sheets through the collating machine into cooperating similar machines in accordance with a predetermined pattern. The collator can be adapted to accept sheets fed from either of two sides of the collator thus retaining or inverting in the receiver the uppermost side of the sheets as fed to effect a desired sheet orientation in the receiver.

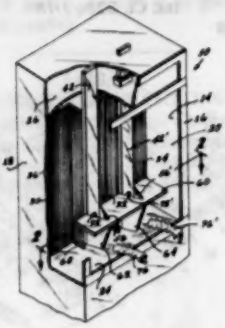
3,638,938

MAGICAL DISPLAY APPARATUS

James Mark Wilson, 4149 Regal Oak Drive, Encino, Calif.

Filed Feb. 3, 1969, Ser. No. 795,837
Int. Cl. A63j *5/00*
U.S. Cl. 272—13 **6 Claims**

The device or apparatus of the invention is a magical display apparatus in which a pair of hands appears to be disembodied, yet capable of movement and manipulation of physical devices. The apparatus provides members having openings through which human hands can be inserted, the human being concealed behind the apparatus by way of mirrors which reflect surfaces making it appear that the apparent disembodied hands extend from members spaced from the background. The members having openings for the apparent disembodied hands themselves are mounted for directional movement such that their orientation remains the same relative to the concealing mirrors. Simulated artificial



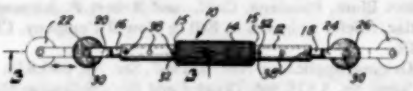
limbs (hands) are displayed. Means are provided to momentarily obscure or obstruct from view the openings while the said members are moving and at this moment live animate hands are substituted for the simulated inanimate ones.

3,638,939

BODY-ENGAGING EXTENSIBLE EXERCISING DEVICE

Charles J. Langley, 6649 Tower Drive, Alexandria, Va.

Filed Sept. 15, 1970, Ser. No. 72,403
Int. Cl. A63b *23/04, 23/02*
U.S. Cl. 272—79 R **3 Claims**



A device which is used for stretching various muscles of the anatomy including, a handle having two spaced rollers which are placed on the inside areas of the legs of the user and pulled toward the abdomen forcing the legs farther and farther apart thus stretching the muscles associated therewith. The distance the legs are forced apart can be regulated by the adjustable telescoping extensions on which the rollers are mounted. The telescoping extensions are adjustably fixed in position by means of a spring detent locking mechanism.

ERRATUM

For Class 350—184 see:
Patent No. 3,638,996

3,638,940

PORTABLE SPRING-BIASED INDOOR JOGGING MACHINE

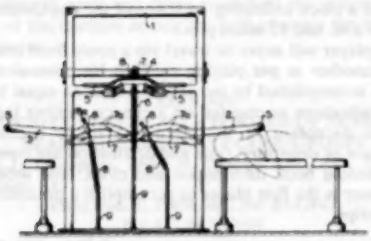
Thomas M. Mehaulic, 32 East Wine St., Uniontown, Pa.

Filed July 2, 1970, Ser. No. 51,892
Int. Cl. A63b *21/00*
U.S. Cl. 272—83 R **6 Claims**

Spring-loaded platform provides a workload for jogging in place. The platform is attached to an upright post and to a counter positioned in the post at visible level. The counter

only operates upon a predetermined jog stroke length. The post is foldable and the platform pivotable into a handy carrying case. A horizontally positioned diaphragm provides a limit stop for the platform.

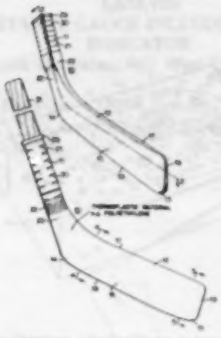
3,638,941
PHYSICAL EXERCISE APPARATUS WITH USER-ACTUATED ARM WHICH IS MOVABLE AGAINST A VARIABLE BIAS
Franz Kulkens, Kammeg 6, 4962 Obernkirchen, Germany
Filed Sept. 9, 1969, Ser. No. 856,378
Claims priority, application Germany, Sept. 10, 1968, G 67 50 684
Int. Cl. A63b *21/02, 21/10*
U.S. Cl. 272—83 R **6 Claims**



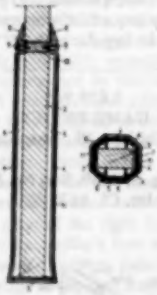
A stationary frame carries one or more actuating members which are forcibly movable with reference to the frame from a normal inactive position to a plurality of active positions in response to the application of requisite force upon an engagement portion provided. Springs are associated with the members and oppose their movement to active positions. Adjusting arrangements permit the opposing force offered by the springs to be varied.

3,638,942
REPLACEABLE BLADE AND SHANK FOR HOCKEY STICK AND A HOCKEY STICK MADE THEREWITH
Frank W. Bassett, St. Catharines, Ontario, Canada, assignor to Cooper of Canada Limited, Toronto, Ontario, Canada
Filed Nov. 17, 1969, Ser. No. 877,367
Int. Cl. A63b *59/14*
U.S. Cl. 273—67 A **10 Claims**

A replaceable blade and shank for a hockey stick is made of a thermoplastic synthetic polymeric material and has a socket into which an end of the shaft of a broken hockey stick can be inserted after the material has been heated to render it pliable, a secure fit between the shank and shaft resulting upon cooling of the material to a rigid condition.

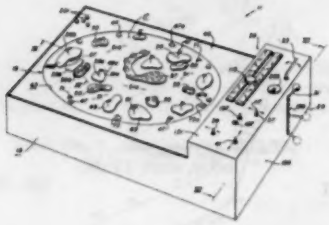


3,638,943
HANDLE FOR A RACKET
Karel Snauwaert, Roeselare, Belgium, assignor to Firma Snauwaert en Depla, Bevern, Roeselare, Belgium
Filed Dec. 8, 1969, Ser. No. 883,149
Claims priority, application Belgium, May 9, 1969, 73850
Int. Cl. A63b *49/08*
U.S. Cl. 273—73 J **3 Claims**



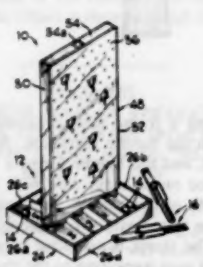
A racket having a frame with a handle extension and a shank secured on the handle extension. A one-piece handle fits on the shank, and the handle forms a tube open at both ends and provided on its inner side with ribs extending the longitudinal length of the handle. The handle is provided at its end nearest the frame with two lugs engaging the shank on opposite sides. The shank is provided between the lugs with an opening which runs transverse to the shank, and a plug extends through this opening. A screw is threadedly engaged in each lug at each end of the plug. The screws secure the handle to the shank. The end of the handle farthest from the frame projects inwardly and a bottom plate closes the handle at this farthest end and helps this end to hold its form.

3,638,944
SIMULATED GOLF GAME
James T. McQueen, Memphis, Tenn., assignor to George L. Rush, Memphis, Tenn., a part interest
Filed June 17, 1969, Ser. No. 834,035
Int. Cl. A63f 7/06
U.S. Cl. 273—87 R 12 Claims



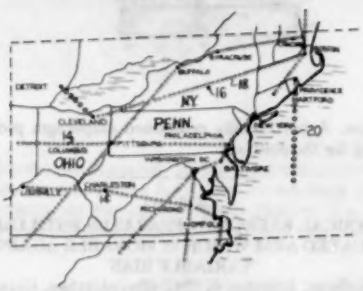
Indoor game apparatus particularly operative for simulating a regular outdoor game such as golf. The apparatus employs a playing field or golf course having a green-colored translucent plastic sheet simulating the golf course ground surface. Underneath the translucent ground surface sheet is arranged light beam means focused upwardly through the green plastic translucent sheet and exhibiting a small white spot of light on the top surface of the sheet and simulating a golf ball. The game apparatus includes means for guidingly supporting the light beam for movement in a horizontal plane and includes two bidirectionally operative electric motor units operative each motor unit for movement of the light beam in a direction perpendicular to the direction of light beam movement caused by the other motor. The light beam is arrangeable at any horizontal point by coordinated actuation of the two motors. The game apparatus includes selectively operative electric switch means for causing movement of the light beam "golf ball" in a desired direction. The game apparatus also includes selectively operative timer switch means for controlling the duration of movement of the "golf ball" light spot and thus the simulated distance or travel of the "ball." The timer switch means also preferably includes a series of automatically sequentially operative switch elements operative for causing an angular path of "ball" movement.

3,638,945
GAME DEVICE
Jeffrey D. Breslow, Chicago, Ill., assignor to Marvin Glass & Associates
Filed Aug. 8, 1969, Ser. No. 848,573
Int. Cl. A63f 7/02
U.S. Cl. 273—95 R 4 Claims



A game device of the type having an enclosure affording a tortuous passage for a playing piece to be deposited therein with openings in opposed faces of the enclosure for attempted interception of the playing piece as it travels through the tortuous passage. The openings are preferably misaligned. A supporting base is provided having separate compartments for storage of intercepted playing pieces and a further compartment for reception of those playing pieces which have completed traversal of the tortuous passageway. Scooplike interception tools are provided for insertion through the apertures in the enclosure for attempted interception of playing pieces.

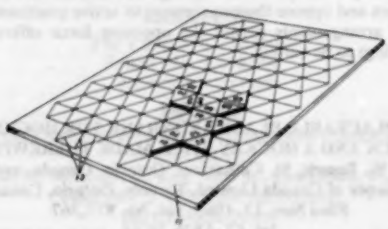
3,638,946
BOARD GAME APPARATUS
Bruce N. Bain, 3250 198 S.E., Issaquah, Wash.
Filed July 27, 1970, Ser. No. 58,626
Int. Cl. A63f 3/02
U.S. Cl. 273—134 AC 8 Claims



A game apparatus including a game board illustrating a map of the United States designating states and various locations, such as certain cities, interconnected by a network of graduated routes; playing cards each designating a city and state; an airplane flight time schedule book revealing departure time and route information corresponding to the locations and a clock indicating 24 hours of the day divided into 12 hours a.m. and 12 hours p.m.

Each player will move or travel via a route from one location to another as per playing cards in his possession. The travel is accomplished by moving an object an equal total of route graduations as counted on a chance number indicator with the exception of predetermined travel acceleration when place of departure, time and destination are coincident with schedule book information and clock time indication. The winner is the first player to accomplish a predetermined total of trips.

3,638,947
GEOMETRIC PATTERNED BOARD GAME
Floyd W. Hardesty, 1238 2nd Ave., San Francisco, Calif.
Filed Mar. 2, 1970, Ser. No. 15,989
Int. Cl. A63f 3/00
U.S. Cl. 273—135 AC 7 Claims



A board game comprising a board divided into a multiplicity of contiguous equal sized hexagonal areas marked in a

variety of colors and playing members in the form of different subdivisions of the board's hexagonal areas also marked in the same colors, the playing members comprising triangular members and diamond-shaped members, some of the latter being of one color and others of two colors. The board areas and playing members are matched in shape and color in a sequence of plays among opposing players.

3,638,948

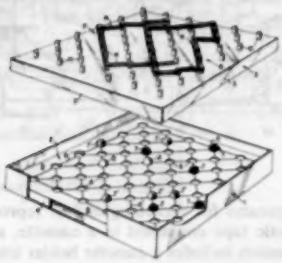
CHANCE-CONTROLLED MARBLE GAME

Richard D. Smith, 913 North Liberty St., Arlington, Va.

Filed Jan. 31, 1969, Ser. No. 795,582

Int. Cl. A63f *3/00*

U.S. Cl. 273—135 AA **6 Claims**



Chance-controlled game apparatus comprising a plurality of differently colored sets of marbles which are individually captured and retained by receiving cells in a base to form a like plurality of random-shaped patterns, a transparent cover overlying the base for viewing the patterns, upstanding posts on the cover in vertical alignment with each receiving cell, and color-matched rubberbands for selective connection of adjacent pairs of posts to form closed loops on the cover corresponding in color and shape to each of the patterns. Relocation of the marbles among the cells changes the shapes of the patterns.

3,638,949

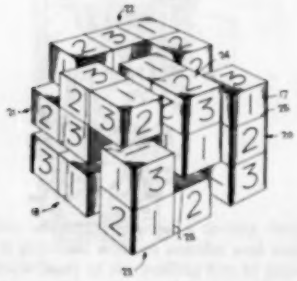
COMPOSITE CUBE PUZZLE FORMED OF NUMERAL-BEARING COMPONENT CUBE GROUPS

Robert I. Thompson, 7444 St. Charles Ave., Apt. 3 F, New Orleans, La.

Filed Dec. 5, 1969, Ser. No. 882,447

Int. Cl. A63f *9/08*

U.S. Cl. 273—157 R **3 Claims**



A puzzle comprising a plurality of cube units several of which are interconnected into groups of cubes so that each group is capable of being assembled to form an overall cube, the exterior faces of each group having a designated numeral thereon so that the numerical total on the faces of adjacent cubes after being assembled is always the same along the several columns and rows of the six overall cube faces.

3,638,950

GOLFER'S STANCE GAUGE INCLUDING UNDUE SWAY INDICATOR

William Kenneth Hyotlaine, 461 West Ocean Blvd., Jupiter, Fla.

Filed Oct. 8, 1970, Ser. No. 79,017

Int. Cl. A63b *69/36*

U.S. Cl. 273—187 R **10 Claims**

The stance gauge has a first strip to be straddled by the golfer's feet substantially normal to the desired line of flight of a golf ball. A replaceable rod is mounted on the front end of the strip for indicating the proper teeing position of the golf ball prior to swinging. A cross-strip is adjustable intermediate its ends on the first strip intermediate the ends of the first strip. A left foot positioning pad is pivotally adjustably mounted on the cross-strip to be engaged by the toe of the shoe of the golfer's left foot. A right foot positioning pad is pivotally and axially adjustably mounted on the cross-strip and is adapted to be engaged by the toe of the shoe of the golfer's right foot. A vertical rod is adjustably secured to the rear end of the first strip adapted to be positioned in rear of the golfer's left knee to indicate undue sway of the golfer's body during swinging. First indicia on the cross-strip cooperates with an edge of the left foot pad for indicating its proper angle adjustment; other indicia on the cross-strip cooperates with an edge of the right foot pad for indicating the spacing between the golfer's feet in relation to the golf ball during back swing. Further indicia on the cross-strip cooperates with an edge of the first strip for indicating lateral positioning of the cross-strip on the first strip. Still further indicia on the cross-strip cooperates with an edge of the first strip for indicating proper angular positioning of the said strip to allow for "hooking" and "slicing" the golf ball. And pins are provided for securing the strips down upon the ground surface after stance adjustments have been made.

3,638,951

PHONOGRAPH MOUNTING STRUCTURE

James L. Hess, Jr., Moorestown, N.J., and Harrison E. Dow, Wycombe, Pa., assignors to Philco-Ford Corporation, Philadelphia, Pa.

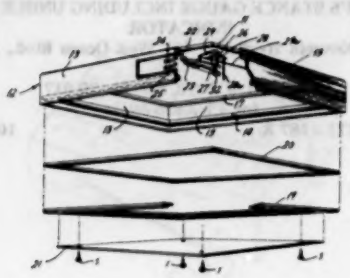
Filed Dec. 22, 1969, Ser. No. 886,858

Int. Cl. G11b *1/00*

U.S. Cl. 274—2 **3 Claims**

A phonograph turntable and record changer apparatus rigidly mounted upon cabinet structure provided with a dust

cover. Operating levers for control elements of the apparatus are accessible without removing the cover, since they extend through apertures in the front of the cabinet structure, and



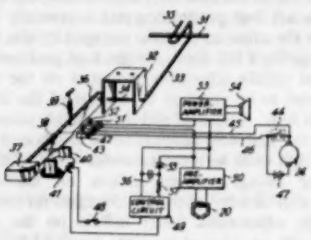
the entire structure is resiliently supported upon a base by foamed polyurethane spacer means disposed between confronting peripheral portions of the cabinet structure and its base.

3,638,952

TAPE DRIVE SPEED CHANGING APPARATUS

Itsuki Ban, 829, Higashi-Oizumimachi, Nerimu-ku, Tokyo, Japan

Filed Apr. 15, 1970, Ser. No. 28,599
Claims priority, application Japan, Apr. 17, 1969, 44/34690
Int. Cl. G11b *15/29, 15/44*
U.S. Cl. 274—4 D **7 Claims**



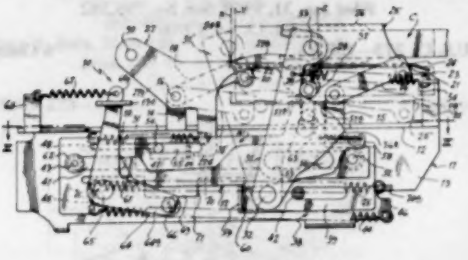
A tape drive speed changing apparatus for a magnetic tape player, comprising a motor attaining high or low speed, small and large drive pulleys connected to the output shaft of the motor, a flywheel attached to capstan for driving a magnetic tape, a belt normally trained between the small drive pulley and the flywheel, shift means moving the belt to the position where the belt is shifted from the small drive pulley to the large drive pulley, a changing switch actuated by the shift means to change over the rotational speed of the motor from low to high, lock means locking the shift means in the condition that the belt is moved to the position where the belt is trained to the large drive pulley, and control means controlling operation of the lock means whereby the magnetic tape may be rotated at normal playing speed or fast speed in relation to operation of the shift means.

3,638,953

RECORDING AND REPRODUCING APPARATUS USING MAGNETIC TAPE CASSETTE

Makoto Kodama, Kanagawa-ken, and Harunori Yamamoto, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 25, 1970, Ser. No. 39,992
Claims priority, application Japan, May 29, 1969, 44/42218
Int. Cl. G11b *15/24*
U.S. Cl. 274—4 E **10 Claims**



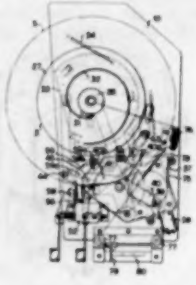
In an apparatus for recording and/or reproducing signals on a magnetic tape contained in a cassette, a cassette-handling mechanism includes a cassette holder into which a cassette is slidably insertable while actuating devices that load first, second and third springs. Upon the full insertion of the cassette into the holder, the first spring force is released to shift or depress the holder and the cassette therein from an elevated position to an operative position with respect to tape-driving elements and a recording and/or reproducing head. Upon actuation of an ejection control, the force of the second loaded spring is released to return the holder and the cassette therein to the elevated position of the holder, whereupon the force of the third loaded spring is automatically released to slidably propel the cassette substantially out of the holder.

3,638,954

SPIRAL TRACK TYPE MAGNETIC RECORDING AND REPRODUCING DEVICE

Saburo Kato, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

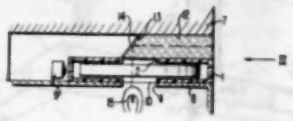
Filed Apr. 22, 1969, Ser. No. 818,255
Claims priority, application Japan, Apr. 24, 1968, 43/27556
Int. Cl. G11b *5/80*
U.S. Cl. 274—4 J **3 Claims**



A spiral track type magnetic recording and reproducing device of the type in which upon depression of a first push-button (11) the recording or reproduction operation is

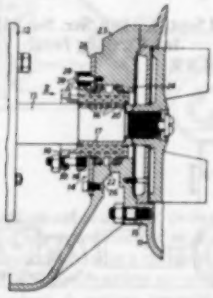
started; upon completion of said operation, a head is automatically returned to its initial position and said device is also stopped; upon depression of said pushbutton at an arbitrary time during the course of said operation, said operation can be interrupted temporarily upon depression of said pushbutton again, said interrupted operation can be restarted; and only a desired portion of the recording can be repetitively reproduced by depressing a second pushbutton (1) at an arbitrary time during said operation, keeping depressing for a desired time and then releasing said second pushbutton.

3,638,955
CASSETTE TAPE RECORDER
Eiichi Wada, Yokohama-shi, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Oct. 7, 1969, Ser. No. 864,431
Claims priority, application Japan, Oct. 8, 1968, 43/87851
Int. Cl. G11b *5/78*
U.S. Cl. 274—4 C **1 Claim**



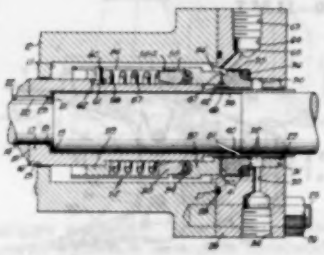
A tape recorder includes a light source disposed below a cassette for illuminating the tape occupying the takeup and return spools through a hole in the cassette wall and reflects the image toward a recorder viewing opening coplanar with the visible outer edge of the cassette.

3,638,956
STUFFING BOXES
Harold Lloyd Dagwell, London, England, assignor to Henry Sykes Limited, London, England
Filed Mar. 14, 1969, Ser. No. 807,381
Claims priority, application Great Britain, Mar. 14, 1968, 12,486/68
Int. Cl. F16j *15/16*
U.S. Cl. 277—30 **2 Claims**



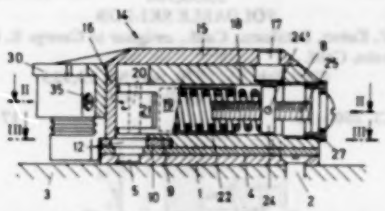
A stuffing box assembly between a driving device and a driven device is provided with an annular seal which encircles the cylindrical body of the stuffing box to provide flexible sealing between the cylindrical body and a socket in which it is accommodated, said seal comprising a length of rubberlike material formed into a ring with the then-adjacent ends of the length virtually abutting, whereby the seal can readily be replaced by feeding a fresh length of rubberlike material around the cylindrical body. The stuffing box also comprises a gland member formed with a peripheral recess to receive a stop in the form of a rubberlike sleeve on a bolt to hold the gland member and thus the stuffing box against tendency to turn with a rotating shaft but to permit limited radial movement of the stuffing box.

3,638,957
MECHANICAL SEAL WITH LUBRICATING MEANS
Joseph A. Marsi, Baldwin Park, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Mar. 19, 1970, Ser. No. 20,954
Int. Cl. F16j *15/34*
U.S. Cl. 277—96 **9 Claims**



A mechanical seal assembly of the type having a stationary sealing ring and a rotary sealing ring biased one toward the other to form an annular sealing interface between the relatively rotatable radial faces of the rings, one of the rings including a reservoir in its annular surface consisting of a lubricating groove or grooves providing groove portions oblique to the path of rotation of the rotary sealing ring, and having sealing face surfaces between the groove or grooves and the inner and outer peripheries of the annular interface.

3,638,958
FRONT JAW FOR SAFETY SKI BINDINGS
Hans Dobler, Zurich, Switzerland, assignor to A. Attenhofer AG, Zurich, Switzerland
Filed June 5, 1970, Ser. No. 43,839
Claims priority, application Switzerland, June 11, 1969, 8935/69
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T **7 Claims**



A front jaw for safety ski bindings and provided with a sole holder overlapping the shoe sole comprises a swivel jaw carrying the shoe sole holder and having a horizontal spring containing housing pivotally connected at its front end while the other end of the jaw has two downwardly extending projections which limit the horizontal swivel movement of the jaw relatively to a baseplate which is attachable to a ski. A spring operated roller in the spring containing housing engages the

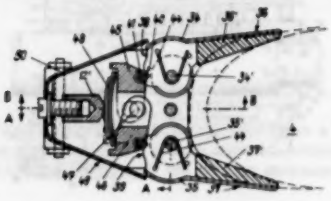
inner face of a V-shaped guiding surface provided on the rear end of the swivel jaw. The roller is normally disposed in the curved face formed at the apex between the leg portions of the V-shaped guiding surface for holding the jaw in its normal centered position with respect to the baseplate. The spring containing housing is pivotally mounted with its rear end on a vertical pin projecting from the baseplate.

3,638,959

TOE STOP MEMBER FOR SKI SAFETY BINDINGS

Henri Reuge, 26, rue des Rasses, 1450 Sainte-Croix, Vaud, Switzerland

Filed Aug. 19, 1970, Ser. No. 65,021
Claims priority, application Switzerland, Sept. 5, 1969, 12821/69
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T **5 Claims**



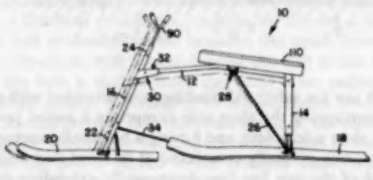
A toe stop member of a safety ski binding comprises a frame fixable onto a ski so as to be angularly fixed against movement in the plane of the ski. First and second rearwardly extending jaws are pivotally mounted on the frame about first and second axes perpendicular to the said plane of a ski, a front end of each jaw having a camlike surface comprising a hollow. Elastic means urge first and second rollers along lines of action passing at least approximately through the first and second axes into the hollows so as to releasably hold the jaws in an operative boot-gripping position in which the jaws can fit around at least a part of the toe end of a boot placed on a ski to which the stop member may be fitted. Abutment means, such as one or more rollers or even part of the jaws, are provided to bear against the toe end of a boot thus fixed to prevent forward motion thereof in relation to the ski. Part of the frame may be hinged about an axis in the plane of the ski to enable adjustment of the height of the jaws, for example to accommodate for a layer of snow between the boot and the ski.

3,638,960

FOLDABLE SKI-BOB

Earl V. Eaton, Petaluma, Calif., assignor to George E. Garcia, Novato, Calif.

Filed Feb. 25, 1970, Ser. No. 13,923
Int. Cl. B62b *13/04*
U.S. Cl. 280—16 **17 Claims**



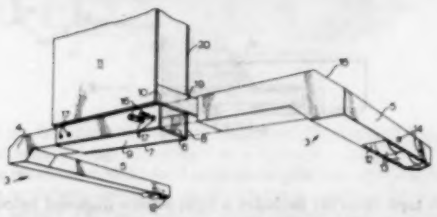
A ski-bob that is collapsible from its normal operating configuration to a folded configuration comprises a central frame section having a seat with a front frame section including a steering column and a rear frame section connected to opposite ends of the central frame section. A front steering ski is pivotally connected to the steering column and a rear ski is pivotally connected to the rear frame section which includes a resilient shock absorber. The frame is flexible to a degree that the front ski will extend forwardly from the rear ski in response to weight applied to the seat, a factor which increases running stability.

3,638,961

STRADDLE ASSEMBLY

Kurt K. Larsen, King, Ontario, Canada, assignor to Blue Giant Equipment of Canada Limited, Brampton, Ontario, Canada

Filed June 25, 1969, Ser. No. 842,429
Int. Cl. B60n *27/00*
U.S. Cl. 280—150 C **2 Claims**



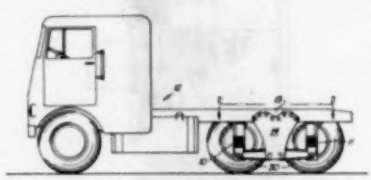
An adjustable straddle assembly for a materials-handling device which is telescopically adjustable to enable the device to be used with a variety of loads within its design limitations and which facilitates repairs to be made to the straddle members of the assembly without the necessity of taking the device itself out of service during the entire time required to make the repairs. The leg components of the assembly connect with the body components of the assembly in a close tolerance connection.

3,638,962

SUSPENSION SYSTEM FOR TANDEM AXLES OF AUTOMOTIVE VEHICLES

Edwin F. Gardner, 1228 West 8450 South, West Jordan, Utah

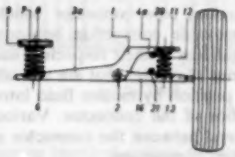
Filed Sept. 8, 1969, Ser. No. 855,990
Int. Cl. B60g *19/02*
U.S. Cl. 280—104.5 R **10 Claims**



A superior riding suspension system for tandem axles of automotive vehicles, such as trucks, truck tractors, and trailers. Bellcranks are provided back-to-back between the axles, a set thereof being provided at each set of axle ends at opposite sides of the vehicle. The bellcranks are fulcrumed intermediate their lever arms to the frame of the vehicle, thereby individually suspending respective axles. Corresponding lever arms of the sets of bellcranks have their ends pivotally attached to the respective axle end portions;

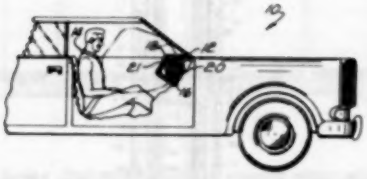
the other corresponding lever arms of the sets of bellcranks are coupled together for cooperative action and reaction, respectively. In this way the system provides for equalization of road shocks as well as a predetermined degree of self-steering. Either or both the coupling means and the coupled sets of corresponding arms have shock absorbing characteristics, so as to cushion road shocks.

3,638,963
SPRING SYSTEM
Gerrit Hendrik Van Leeuwen, Soesterenweg 2-4, Soestdijk, Netherlands
Filed Dec. 2, 1969, Ser. No. 888,199
Claims priority, application Netherlands, Dec. 3, 1968, 6817259
Int. Cl. B60g *3/00*
U.S. Cl. 280—124 **8 Claims**



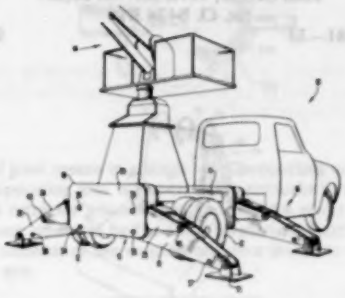
A spring suspension system comprises a first spring device and a spring arm adapted to turn about a pivot or a pivotal line of the spring-supported mass, and a second spring device connected between the spring arm and the spring-supported mass, the second spring device being capable of preferential action with respect to the first spring device.

3,638,964
VEHICLE SAFETY APPARATUS HAVING EXPANDABLE CONFINEMENT
Richard Chute, Huntington Woods, Mich., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed Aug. 12, 1969, Ser. No. 849,394
Int. Cl. B60r *21/00*
U.S. Cl. 280—150 AB **16 Claims**



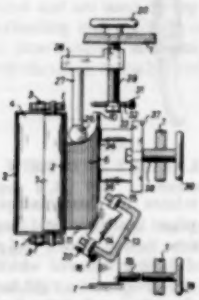
An improved safety apparatus for protecting an occupant of a vehicle during the occurrence of an accident includes an expandable confinement having a collapsed condition and an expanded condition for restraining an occupant of the vehicle during an accident. A unitary assembly for effecting expansion of the confinement includes a percussion-actuated explosive valve which is impacted with an actuator in response to the occurrence of an accident to effect operation of the valve to an open condition. Opening the valve enables fluid to flow from a source of fluid to the confinement to effect expansion of the confinement. The actuator can be either a mass which is impacted against the valve in response to the occurrence of an accident or a fixed member against which the valve is impacted. The flow of fluid from the source of fluid is at least partially stabilized by a flow regulator assembly to thereby tend to eliminate "peak" or excessively high rates of expansion of the confinement.

3,638,965
VEHICLE OUTRIGGERS
Samuel G. Cassady, Decatur, Ga., assignor to Roy A. Martin and W. R. Martin, Atlanta, Ga.
Filed Jan. 19, 1970, Ser. No. 3,647
Int. Cl. B60s *9/02*
U.S. Cl. 280—150.5 **8 Claims**



An outrigger mechanism for a truck or similar vehicle which includes a generally rectangular framework connectable to a vehicle and having generally vertical side portions and a generally horizontal top portion. Support legs are pivotally connected at their inner ends to the lower portion of each side of the framework and are moveable between upwardly extending stored positions and outwardly extending ground engaging positions on opposite sides of the vehicle. A locking link is pivotally connected to each support leg and is moveable between a position resting upon the upper horizontal surface of the framework when its support leg is in its upper stored position and a wedging position against the vertical side portion of the framework when its support leg is in its outwardly extending ground engaging position to lock the support leg in this position.

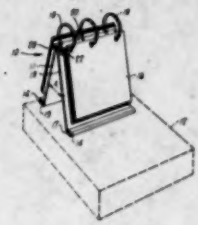
3,638,966
METHOD OF ROUNDING THE BACKS OF BOOKS AND A MACHINE FOR PERFORMING THE SAME
Frans Wiersma, Reiden, Switzerland, assignor to Firma Jos. Hunkeler, Wikon, Switzerland
Filed Dec. 9, 1969, Ser. No. 883,482
Claims priority, application Switzerland, Dec. 17, 1968, 18702/68
Int. Cl. B42d *1/00*; **B42c** *5/00*
U.S. Cl. 281—21 **10 Claims**



A method and a machine for rounding the backs of books by first rounding one side of the backs with a first set of shap-

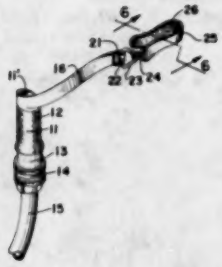
ing rolls progressively approaching the median central plane of the books; whilst the books are conveyed through the machine and by then rounding the other side of the backs with a second preferably similar set of shaping rolls as the books continue to be conveyed through the machine.

3,638,967
LOOSE LEAF RING BINDER
Donald L. Mullins, Wichita, Kans., assignor to Sanderson Films, Inc., Denver, Colo.
Filed Oct. 13, 1970, Ser. No. 80,287
Int. Cl. B42d 3/18
U.S. Cl. 281—33 9 Claims



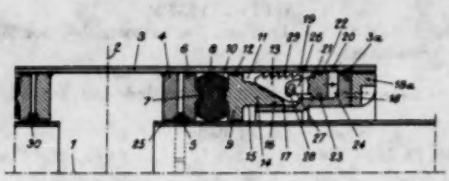
A loose leaf ring-type binder which also functions as a rigid viewing stand for a plurality of pages or flipover cards. The two covers of the binder include offset leg portions terminating at the hinge points with the back of the binder. When the covers are folded back at a certain angle, the leg portions of the covers are brought into juxtaposed contact with the back of the binder thereby restricting any movement of the back about the two hinge points to provide a rigid support for the cards carried in the binder.

3,638,968
FAUCET ADAPTER
Robert W. Barks, 112 Washington St., Delaware City, Del.
Filed Aug. 21, 1969, Ser. No. 851,979
Int. Cl. E03c 1/00; F16l 21/00
U.S. Cl. 285—8 4 Claims



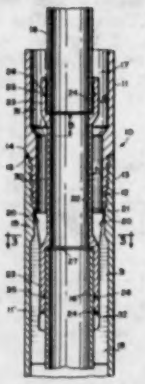
This invention relates to a faucet adapter device for flexibly connecting a pliant hose to a rigid faucet. The device includes a flexible tube having at one end a fastener made of elongated strips of flexible material which is wound around the joint between the device and a rigid faucet and secured in place. Affixed at the other end of the device is a rigid hose-threaded male coupling adapter for connection with a corresponding female structure located on the end of a pliant hose.

3,638,969
FLUID CONTROLLED PIPE CONNECTOR
Francisco M. Serrano, Paris, France, assignor to Compagnie Francaise des Petroles Societe Anonyme, Paris, France
Filed Nov. 24, 1969, Ser. No. 879,475
Claims priority, application France, Nov. 22, 1968, 174885
Int. Cl. F16l 17/02
U.S. Cl. 285—18 11 Claims



A fluid controlled pipe connector which is capable of providing a removable connection between two adjoining pipe lengths regardless of their respective sizes. The connector utilizes a series of wedges that are activated in a gripping or nongripping position by motive fluid introduced into the appropriate orifice of the connector. Various sealing members are positioned between the connector and the pipes to provide a fluidtight connection.

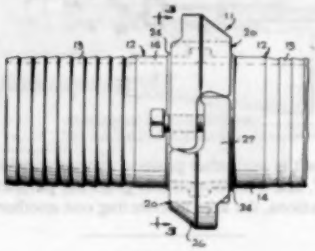
3,638,970
JOINT FOR DOUBLE-WALLED DRILL PIPE
Alvin V. Sandquist, and Floyd Walter Becker, both of Calgary, Alberta, Canada, assignors to Becker Drilling (Alberta) Ltd., Calgary, Alberta, Canada
Filed Feb. 12, 1968, Ser. No. 704,815
Int. Cl. F16l 35/00
U.S. Cl. 285—24 5 Claims



A length of double-wall pipe for a reverse circulation drill string having an outer pipe and a concentrically disposed inner pipe, the outer pipe of which has threaded box and pin ends and the inner pipe fixed coaxially in the outer pipe and disposed concentrically to provide an annular flow passage between said pipes by longitudinal spacing members engaging said inner and outer pipes and bridging said flow passage. A connector tube joining sections of inner pipe comprising a central portion having an inner diameter the same as the inner diameter of the inner pipe and having sleeve end portions formed with a coaxial bore having an inner diameter larger than the exterior diameter of the inner pipe for engaging the inner pipe as a free sliding fit and fluid seal means in

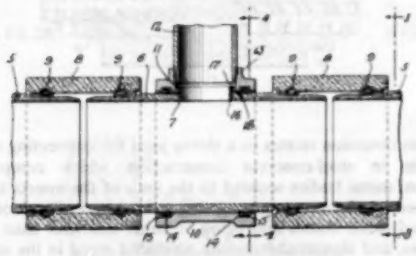
said sleeve end portions for frictionally engaging the ends of the inner pipe of adjacent pipe lengths connected together by threaded engagement of said box and pin ends.

3,638,971
COUPLING
Charles Harry Smith, Glendale, Calif., assignor to The Rucker Company, Oakland, Calif.
Filed June 8, 1970, Ser. No. 44,148
Int. Cl. B60d *1/08*
U.S. Cl. 285—74 **5 Claims**



A coupling having identical collars on adapters with overlapping lugs and bolts to tighten the joint by exerting axial force tending to separate the overlapped lugs.

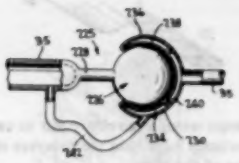
3,638,972
BRANCH PIPE FITTING FOR FLUID PRESSURE PIPELINE
Albert Earl Alpine, Norristown, Pa., assignor to Certain-Feed Products Corporation, Ardmore, Pa.
Filed Nov. 4, 1969, Ser. No. 873,831
Int. Cl. F16l *41/00*
U.S. Cl. 285—156 **1 Claim**



The device disclosed includes a conduit piece adapted to be connected into a pipeline and having an aperture in the sidewall for a branch connection, and a circumferentially unbroken and apertured sleeve surrounding the apertured portion of the circuit piece, with circumferentially unbroken packing rings between the sleeve and conduit piece at opposite sides of the apertures, providing for pressure equalization inside and outside of the conduit piece in the region of the connection.

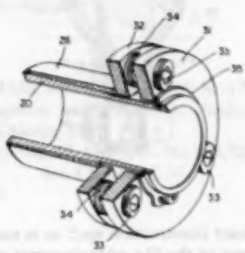
3,638,973
JOINT MEANS FOR USE IN WORK SUPPORTING ARM
Charles Ellis Poletti, 5400 Pooks Hill Road, Bethesda, Md.
Filed June 4, 1969, Ser. No. 830,422
Int. Cl. F16l *27/00*
U.S. Cl. 285—184 **17 Claims**

A joint means for coupling two elements forming part of a work-supporting arm wherein the joint means is operable between a relaxed condition in which relative movement is permitted between the elements of the work-supporting arm and a rigidified condition in which the elements of the work-supporting arm are secured against relative movement. Pressurized fluid is utilized to effect rigidification with a continuous pressurized fluid system being operable to rigidify a plu-



rality of joint means in a single work-supporting arm. Such a work-supporting arm is shown to be particularly useful in a surgical retractor wherein the arm includes retractor-retaining means, operable by the same pressurized fluid system to permit removal of the surgical retractor from the work-supporting arm.

3,638,974
MECHANICAL ROTARY SELF-INTERLOCKING DEVICE
Andrew Stratienko, 8503 Elliston Drive, Philadelphia, Pa.
Filed Apr. 1, 1971, Ser. No. 130,390
Int. Cl. F16d *1/06*
U.S. Cl. 287—52.06 **3 Claims**

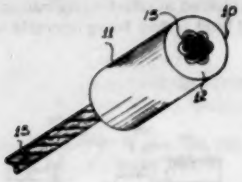


A keyless bushing comprises inner and outer wedge rings and securely holds a hubbed part, such as a gear, pulley, wheel, coupling and the like, on a shaft for transmitting torque and axial thrust. No key or keyway is required on either the hubbed part or the shaft. Calibrated springs preferably conical disc springs, of preselected size and number are provided and are used during the initial installation to avoid overloading and cracking of the hubbed part while at the same time assuring adequate gripping force to obtain the required clamping force between the hubbed part and the shaft.

3,638,975
WIRE ROPE FERRULE
Guenther Buettner, R.R. No. 1, Hemmingford, Quebec, Canada
Filed Apr. 8, 1970, Ser. No. 26,702
Int. Cl. F16g *11/02, 11/14*
U.S. Cl. 287—75 **5 Claims**

The invention relates to a swage ferrule for use in enclosing the end of a wire rope. The ferrule comprises a swagable metal body having a longitudinally extending bore preformed to provide integral, parallel, longitudinally extending, alternate ridges and grooves, the inner portions of the ferrule

ridges being adapted to lie within a circle of slightly less diameter than an imaginary circle enclosing the outermost



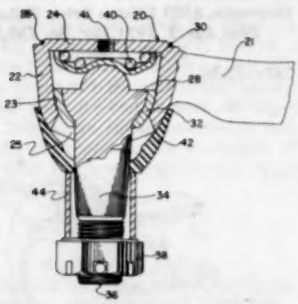
portion of the rope wires whereby, prior to swaging, the inner ferrule ridge portions lie within the grooves of the rope, causing straightening of the rope.

3,638,976

BALL JOINT

John R. Andrew, Columbus, Ohio, assignor to The Columbus Auto Parts Company, Columbus, Ohio

Filed Apr. 7, 1969, Ser. No. 813,900
Int. Cl. F16c 11/06
U.S. Cl. 287—90 C **4 Claims**



A flexible joint construction such as is used in automotive steering linkages or the like wherein upper and lower electrically conductive housing portions are fused together at a junction such that the space between the inner housing surfaces is substantially equal to the stacked dimensions of the internal elements of the joints. The resulting swivel joints are characterized by precisely controlled swivel torque values and extended fatigue life during operational use.

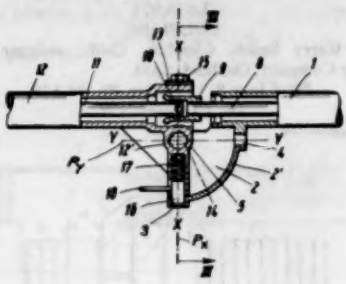
3,638,977

PIVOT ASSEMBLY FOR HAYMAKING MACHINES AND THE LIKE

Josef Purrer, Gottmadingen, Germany, assignor to Maschinenfabrik Fahr Aktiengesellschaft, Gottmadingen, Germany

Filed June 19, 1967, Ser. No. 647,065
Claims priority, application Germany, June 24, 1966, M 69954
Int. Cl. F16c 11/00
U.S. Cl. 287—99 **4 Claims**

A pivot assembly for the inwardly swingable outrigger beam of a rotary-rake haymaking implement having a pair of hollow beam sections relatively swingable to include an angle of 90° between them in one position thereof and axially aligned in another position thereof, a shaft extending through the beam sections and axially subdivided into a pair of interconnectable shaft sections disengaged from one another in said one position and mutually interconnected in said other position of the beam sections, and a ball joint interconnecting said beam sections for relative pivotal movement thereof between these positions about a vertical axis, laterally offset



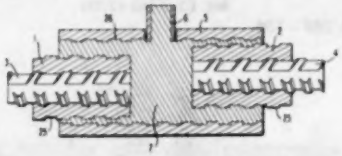
from the shaft in said other position and perpendicular to the axis thereof, and a horizontal axis generally parallel to one of the shaft sections, the axes intersecting one another.

3,638,978

SLEEVE JOINT FOR CONNECTING STEEL INSERTS IN STEEL-CONCRETE CONSTRUCTION

Hans Guntermann, Essen-Steele, Germany, assignor to Elektro-Thermit G.m.b.H., Essen, Germany

Filed Dec. 21, 1967, Ser. No. 692,526
Claims priority, application Germany, Dec. 24, 1966, D 34794
Int. Cl. F16b 7/00
U.S. Cl. 287—108 **10 Claims**



This invention relates to a sleeve joint for connecting steel inserts in steel-concrete construction which comprises shaped metal bodies secured to the ends of the inserts to be connected, sleeve means enclosing at least part of both of the shaped metal bodies and being of larger diameter than said bodies, and aluminothermically produced metal in the space between the sleeve means and said bodies.

3,638,979

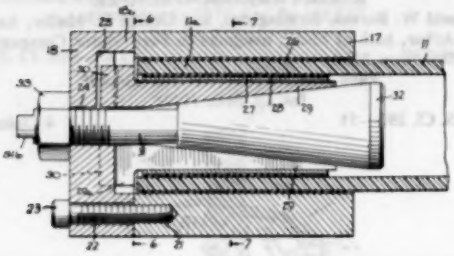
FORCE-TRANSMITTING SYSTEMS

Edgar Francois, Wayne, N.J.; Edwin C. Uhlig, deceased, late of South Bend, Ind., and Doris L. Uhlig, administratrix, New Haven, Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Nov. 19, 1969, Ser. No. 878,046
Int. Cl. F16d 1/06
U.S. Cl. 287—124 **15 Claims**

A force-transmitting system including a cylindrical fiber-reinforced resin tube to which stress is transferred simultaneously via both the outside and inside surfaces of the tube, is disclosed. The system utilizes a drivable fitting which includes an external rigid coupling sleeve and an internal radially expansible circumferential arrangement of elongated wedge elements, defining between the former and the latter an annular cylindrical space in which one end region of the tube wall can be received and radially clamped. Distribution

of stress transfer over the entire expanse of the clamped portion of the tube is provided for by means of a pair of substantially coextensive, circumferentially continuous, uniform thickness layers of elastomeric material bonded to the outside and inside tube surfaces, respectively. An expansible metal liner sleeve is bonded to the inner surface of the inner elastomer layer to prevent the latter from being extruded between the wedge elements, and the external surfaces of the



latter may be roughened for positive gripping engagement with the inner surface of the liner sleeve.

The foregoing abstract is not to be taken either as a complete exposition or as a limitation of the present invention, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be had to the following detailed description and the accompanying drawings as well as to the claims.

3,638,980

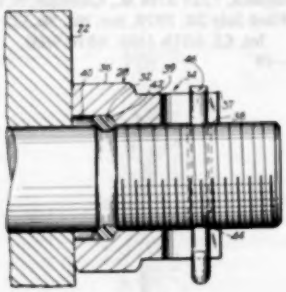
SELF-RETAINED BOLT ASSEMBLY

Walter H. Kleinhenn, Flourtown, Pa., assignor to Standard Pressed Steel Co., Jenkintown, Pa.

Filed Jan. 2, 1970, Ser. No. 270

Int. Cl. F16b *5/02, 39/04, 39/34*

U.S. Cl. 287—189.36 **6 Claims**



A self-retained bolt assembly including a bolt having a circumferentially compressible plastic ring carried in a groove at or adjacent the thread runout. The ring compresses as the bolt is inserted into or withdrawn from a workpiece. With the bolt installed in an aperture in a workpiece, with the ring having been passed completely through the workpiece, the ring diameter is greater than the diameter of the aperture, thereby holding the bolt in the workpiece even in the absence of a nut turned onto the bolt.

3,638,981

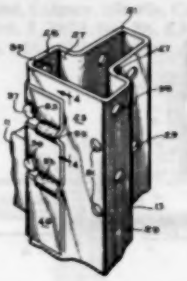
STRUCTURAL LOCK FOR CONNECTING HORIZONTAL AND VERTICAL MEMBERS

John J. Weider, Arlington Heights, Ill., assignor to Speedrack Inc., Skokie, Ill.

Filed Nov. 24, 1969, Ser. No. 879,116

Int. Cl. F16b *7/00*

U.S. Cl. 287—189.36 **4 Claims**



A structural lock for connecting a horizontal arm to a vertical column designed to positively prevent inadvertent disengagement. Two separate connections are made at opposite sides of the column to lock the end of the horizontal arm to the column. The first connection is pivotal about a vertical axis, and it is then required that the arm be pivoted into position to subsequently make the second connection on the opposite side of the column. Loading of the arm causes firmness of the lock to increase.

3,638,982

CHAIR WITH TILTABLE SEAT

Howard D. Chapman, and Vincent A. Panico, assignors to Clarin Corp., Chicago, Ill.

Filed Aug. 15, 1968, Ser. No. 850,529

Int. Cl. A47c *4/20*

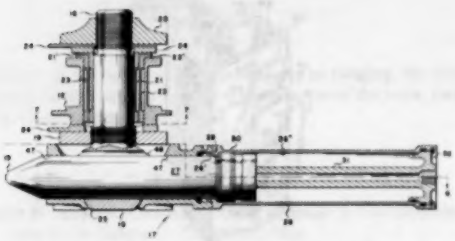
U.S. Cl. 297—332 **6 Claims**

A spring device for lifting a chair seat into an upright position when not in use. The spring is an elongate flat strip of metal attached at one end to the chair frame. The opposite free end of the spring is in sliding pressure contact with the underside of the chair seat so as to cause the seat to move to an upright position in a smooth motion.

3,638,983
LOCKING MECHANISM AND ACTUATING MEANS THEREFOR

James W. Flournoy, and Gary F. Heyden, both of Atlanta, Ga., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed June 2, 1969, Ser. No. 829,266
Int. Cl. E05c *19/00*; **E05b** *51/02*; **E05c** *15/00*
U.S. Cl. 292—302 **9 Claims**

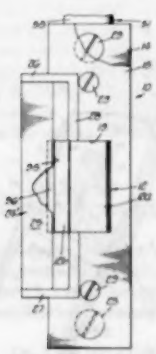


There is provided herein a receptacle base with self-aligning conical stud which is mutually retained by a pin containing an internal, concentrically mounted hydraulic actuator to permit maximum locking and unlocking force in minimal space. Double eccentric bushings in conjunction with double axial nuts provide three mutually perpendicular adjustments for the stud and receptacle. Conical male and female lock members provide repeatability of location one member to the other which in conjunction with the three mutually perpendicular adjustments minimize the required accuracy of location of the several elements which comprise the mechanism.

3,638,984
ELECTRIC RELEASE STRIKE

Robert E. Davidson, Santa Susana, Calif., assignor to Adams Rite Manufacturing Company, Glendale, Calif.

Filed Jan. 13, 1969, Ser. No. 790,611
Int. Cl. E05b *15/02*; **E05c** *3/06*
U.S. Cl. 292—341.16 **3 Claims**



An electric release strike in which a strike bolt is supported for swinging movement to a position projecting through a casing opening and to a retracted position, the bolt being spring urged to its projecting position. A latch in the casing is pivoted for swinging movement to latching and nonlatching positions, and in the latching position, to which it is spring urged, is pivoted overcenter to occupy a position in the path of movement of the strike bolt towards its retracted position. The latch is movable to a nonlatching position by a coupled actuator in the form of a solenoid plunger operatively associated with an energizable solenoid coil positioned exteriorly of the casing, the coil assembly being removably mountable from the exterior of the casing to permit ease of replacement or change to a coil having a different characteristic.

3,638,985
ENERGY ABSORBING BUMPER

David W. Barton, Birmingham, and George H. Muller, Ann Arbor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed June 26, 1969, Ser. No. 836,895
Int. Cl. B60r *19/08*
U.S. Cl. 293—71 **4 Claims**

An energy adsorbing bumper particularly adapted to shield motor vehicle structural members from impact damage. The bumper includes a resiliently deformable, arcuate member secured to one of the structural members and defining therewith a chamber. Web means extend from the arcuate member and into the chamber. Initial collapse of the arcuate member as a whole due to an impart face is followed by a secondary collapse of the web means due to contact with the structural member, thereby providing for the adsorption of large amounts of impact energy. The connection between the arcuate and structural members is hidden from view by a flap integrally formed with and extending from the arcuate member.

3,638,986
COMBINATION PICK AND SHOVEL

Joseph R. Palagonia, 7229 67th St., Glendale, N.Y.

Filed July 20, 1970, Ser. No. 56,322
Int. Cl. A01b *1/00*; **A01d** *9/00*
U.S. Cl. 294—49 **4 Claims**

A pick, soil strainer, and shovel combination consisting of a pair of spaced-apart parallel channels which taper to a point at one end for penetration into the soil and which con-

verge at their opposite end for securement to the handle of the tool. One of the channels includes a plurality of perforations which permits the soil to be sifted and strained. Connected to the lower end of the handle and extending between the channels is a soil pick which works in conjunction with the parallel channels.

3,638,987

OPEN-MESH WOVEN WIRE TUBE

Alfred W. Fidrych, Stonington, Conn., assignor to Harvey Hubbell, Incorporated, Bridgeport, Conn.

Filed May 1, 1970, Ser. No. 33,822

Int. Cl. F16g *11/03*

U.S. Cl. 294—86 CG **9 Claims**

An open-mesh wire grip having the wire strands so woven that at an intermediate place adjacent to that end thereof opposite to the draft end of the grip there is provided a section of predetermined high-angle weave located between and joined to sections of larger mesh. Preferably in that section of the grip forming such opposite end thereof the weave is such that the strands form a gradually increasing mesh size from said section of high-angle weave.

3,638,988

LATCH ASSEMBLY FOR WELL TOOLS

Cicero C. Brown, c/o Brown Oil Tools Inc., P.O. Box 19236, Houston, Tex.

Filed Oct. 27, 1969, Ser. No. 869,563

Int. Cl. E21b *31/02*

U.S. Cl. 294—86.18 **5 Claims**

A latch assembly which is designed to be inserted into the bore of a well tool having a preexisting landing shoulder and a latching groove spaced below the shoulder for engagement by cooperating seating and gripping elements of a collet member which is slidably supported on a mandrel. The mandrel carries a split latch ring for engagement with the collet member in response to relative movement of the mandrel in order to effect release of the latch assembly from the well tool when desired.

3,638,989

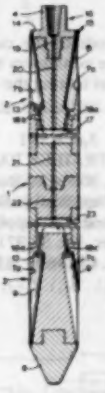
APPARATUS FOR RECOVERING A DRILL STEM

Alvin V. Sandquist, Calgary, Alberta, Canada, assignor to Becker Drills Limited, Calgary, Alberta, Canada

Filed Feb. 5, 1970, Ser. No. 8,866

Int. Cl. E21c *19/00*; **E21b** *31/00*

U.S. Cl. 294—86.24 **4 Claims**



A tool is disclosed for recovering a drill pipe embedded in the ground and detached from a drill string extending from the pipe to a point above ground. The tool has an upper and a lower body portion in axial alignment and a fluid chamber in the tool between the body portions. Each body portion has longitudinal cavities spaced radially about the axis of the body portions and communicate with the fluid chamber. The cavities are at acute angles to the axis of the tool the vertex of each angle being on the side of the cavity nearest the fluid chamber and each cavity having an opening at the end remote from the chamber which defines a groove along the body portion. A wedging member is positioned in each cavity and is slidable therein so that the shank of the wedging member projects laterally and outwardly from the body portion when fluid is passed into the cavities. The shank of each wedging member has a flat toothed portion from gripping the inner wall of a drill pipe. The tool is connected to the end of a drill rod and lowered down the upper drill string until the upper body portion is positioned in the upper drill string and the lower body portion is positioned in the detached drill pipe. Fluid is passed down the drill rod and into the longitudinal cavities whereby the wedging member is projected and grips the inner wall of the upper drill string and drill pipe. The drill rod upper drill string and drill pipe can then be raised from the ground.

3,638,990

CARRIER FOR TUBS OR POTS

Jean Huault, Paris, France, assignor to Lever Brothers Company, New York, N.Y.

Filed Feb. 20, 1970, Ser. No. 13,016

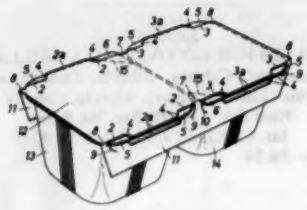
Claims priority, application France, Feb. 2, 1969, 6904400

Int. Cl. B65d *71/00*

U.S. Cl. 294—87.2 **7 Claims**

A carrier for use with two or more containers having generally square tops with outwardly projecting lips. The car-

rier blank comprises a central panel and two opposing side panels downwardly foldable along fold lines interrupted by cuts which receive the lips of the containers, erection cuts



being provided at the ends of the cuts coinciding with the corners of the tops of the containers to allow the side panels to be folded down without tearing the carrier.

3,638,991

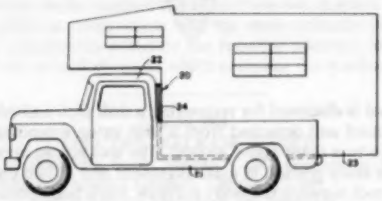
PICKUP TRUCK AND TRAILER PASSAGEWAY DEVICE

Milton R. Hathaway, Jr., 30 Parlee Road, Chelmsford, Mass.

Continuation-in-part of application Ser. No. 716,040, Mar. 26, 1968, now abandoned. This application July 10, 1970, Ser. No. 53,971

Int. Cl. B60p *3/32*

U.S. Cl. 296—23 **3 Claims**



The invention comprises a pickup truck having a box at the rear with a camper mounted on said box. The pickup truck having a cab, with a doorway in the rear of said cab and camper has a doorway in its front and a sleeve connects the doorways together, the cab has a movable door for said cab doorway and the camper has an enclosure in the doorway of said camper.

3,638,992

AUTO AND AIRCRAFT SAFETY LINERS

Lloyd T. Forshee, 1219 Fischer Drive, Saginaw, Mich.

Filed Dec. 2, 1969, Ser. No. 870,321

Int. Cl. B62d *25/00*

U.S. Cl. 296—39 R **5 Claims**

A liner bonded to the inner side of a vehicle body so to aid in protecting passengers against hard impact therewith during a collision or violent movement of the vehicle, the liner comprising a foam sheet which may be variously designed so to include air pockets for additionally absorbing shock.

3,638,993

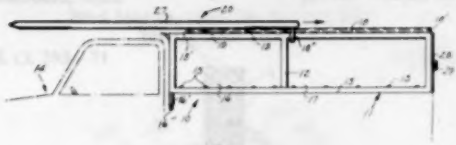
CANOPY FOR VEHICLES

John R. Sullivan, 4286 Bennion Road, Salt Lake City, Utah

Filed Dec. 12, 1969, Ser. No. 884,403

Int. Cl. B60j *7/00*

U.S. Cl. 296—95 R **3 Claims**



A device for installation on pickup trucks and the like, having a forwardly and rearwardly slidable top member, the top member serving to prevent snow and ice from adhering to the windshield. This device includes a pair of rails in which roller assemblies are carried to allow for the smooth positioning of the top member and the rails are secured to side frames that are bolted in a suitable manner to the truck body.

3,638,994

INSTALLATION FOR CLOSING OR OPENING APERTURES IN VEHICLES

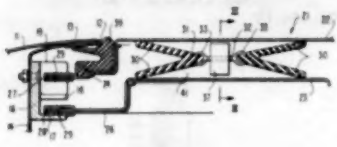
Gerhard Heim, Sindelfingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Aug. 17, 1970, Ser. No. 64,305

Claims priority, application Germany, Aug. 21, 1969, P 19 42 576.4

Int. Cl. B60j *7/10*

U.S. Cl. 296—137 E **12 Claims**



An installation for closing and opening apertures in vehicles, such as openings for sliding roofs, in which a chamber adjustable in its height and its volume and adapted to be connected with a vacuum source is formed between an outer covering and a support part; the sidewalls of the chamber are formed by sectional members of approximately X-shaped cross section with four leg portions which extend elastically along the adjacent top and bottom walls of the chamber.

3,638,995

RECLINING CHAIR

Joseph P. Flanagan, 23 Maple St., Broadalbin, N.Y., and Allan H. Crawford, 72 Evelyn Ave., Amsterdam, N.Y.

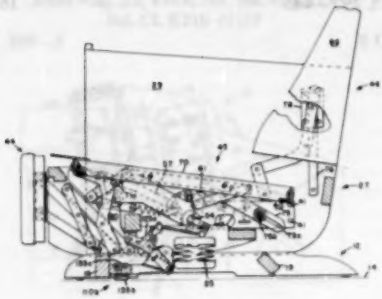
Filed Dec. 16, 1969, Ser. No. 885,446

Int. Cl. A47c *1/02*

U.S. Cl. 297—85 **4 Claims**

A reclining chair having a one-way locking means; the

locking means being carried on the movable chair portion and not being dependent on cooperating means on the stationary chair frame.

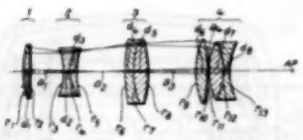


3,638,996

PANCRATIC OCULAR FOR MICROPHOTOGRAPHY

Walter Klein, Wissmar, Germany, assignor to Firma Ernst Leitz GmbH, Wetzlar, Germany

Filed Dec. 2, 1969, Ser. No. 881,402
Claims priority, application Germany, Dec. 12, 1968, P 18 14 132.7
Int. Cl. G02b *15/00*
U.S. Cl. 350—184 **2 Claims**



A pancratic Huygens-type ocular system, preferably for use with microphotography apparatuses, composed of a stationary front lens and a stationary eyelens between which two lens elements are displaceable in the direction of the optical axis. The first displaceable lens element is a negative lens movable from the real image plane towards the front lens, while the second displaceable lens element is a positive lens movable from the real image plane towards the eyelens.

3,638,997

TEMPORARY SEAT SUPPORTED BY SPACED-APART CHAIRS

Scott N. Shapiro, 3530 N. Lake Shore Drive, Chicago, Ill., and William G. Wilkin, Oak Park, Ill., assignors to said Shapiro, by said Wilkin

Filed Mar. 4, 1970, Ser. No. 16,486
Int. Cl. A47c *15/00*
U.S. Cl. 297—232 **14 Claims**

A temporary, portable seat constructed to be readily supported at end portions thereof by spaced-apart chairs and readily removed from the chairs.

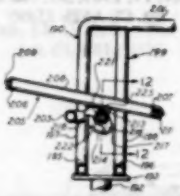
The combination of spaced-apart chairs supporting such a temporary seat.

3,638,998

STADIUM CHAIR WITH FOLDING SEAT

Paul G. Anderson, 655 D S. Indian Hill Blvd., Claremont, Calif.

Filed Aug. 28, 1969, Ser. No. 853,695
Int. Cl. A47c *1/02, 1/06, 1/12*
U.S. Cl. 297—332 **2 Claims**



A stadium chair has spaced pairs of vertical side members with means at their bottoms for attachment to the riser face or the horizontal platform of the row. The vertical members support hinge plates at the level of the seat. Fiber glass, plastic or sheet metal seat surfaces secured to metal outside frames are pivotally mounted to the plates. The rear edge of each seat is weighted. The front of each vertical member has a seat stop against which the seat frame registers when the seat is occupied. A backrest similar to the seat is attached to spaced support members extending from the vertical members. The support members may be either rigidly or articulately attached to the front vertical members.

3,638,999

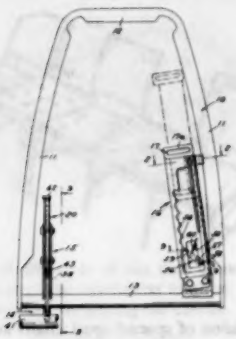
VEHICLE SEAT CONSTRUCTION

Henry J. Tischler, Bloomfield Hills, Mich., assignor to Young Spring & Wire Corporation, Detroit, Mich.

Filed Dec. 17, 1969, Ser. No. 885,760
Int. Cl. B60n *1/02*; **A62b** *35/00*
U.S. Cl. 297—379 **15 Claims**

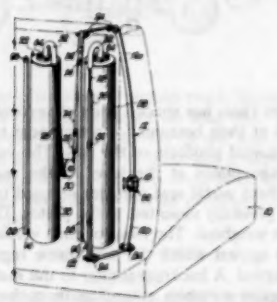
A vehicle seat construction comprising a seat back which is mounted for swinging movement between a generally upright position and a forward folded position with respect to a seat base. A seat lock assembly is provided that permits normal swinging movement of the seat back for ingress and egress to the area behind the seat back and is operable upon deceleration or impact on the vehicle to lock the seat back against forward swinging movement. A shoulder belt lock as-

sembly is provided on the seat back and is operable to permit normal movement of the person seated on the vehicle and is



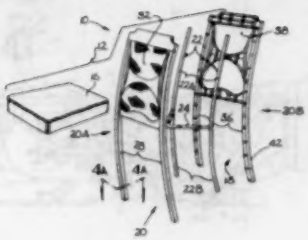
further operable upon relative rapid movement of a seated person to lock the shoulder belt against movement with respect to the seat back.

3,639,000
SHOULDER CROSS SEATBELTS WITH CONTROLLED PASSENGER DECELERATION
Raymond O. Keltner, 8900 Pawnee Lane, Leawood, Kans.
Filed Nov. 17, 1969, Ser. No. 877,290
Int. Cl. A62b *35/00*
U.S. Cl. 297—386 **15 Claims**



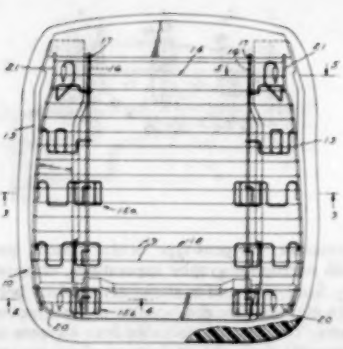
A protective harness worn by an occupant of a vehicle which controls the deceleration of the wearer in the event of a sudden stop or decrease in the speed of the vehicle, as would occur on impact with another vehicle or a stationary object. The belts of the harness are coupled with pistons within fluid-containing cylinders anchored to the vehicle. Each piston and cylinder device permits limited movement of the harness under the momentum of the wearer, but also produces a braking action to oppose such movement and arrest the harness, thereby subjecting the wearer to a reduced rate of deceleration rather than a sudden stop. The device may be conveniently released by the wearer to permit free movement when desired or necessary, and the harness construction assures that the belts will ride flatly against the body of the wearer.

3,639,001
METAL CORE PLASTIC CHAIR
Victor F. Anderson, Wenonah, N.J., assignor to Shell Oil Company, New York, N.Y.
Filed Oct. 9, 1969, Ser. No. 865,043
Int. Cl. A47c *4/02, 7/00, 7/20;* **B44f** *9/02;* **E04c** *2/20*
U.S. Cl. 297—445 **16 Claims**



A composite furniture structure having an inner relatively rigid load-supporting core frame at least partially covered by outer decorative facing means, which are preferably molded from plastic. The invention permits low-cost mass production of furniture of various types and styles from the relatively simple modern styles to highly ornate provincial styles.

3,639,002
SEAT CONSTRUCTION
Henry J. Tischler, Bloomfield Hills, Mich., assignor to Gulf & Western Metals Forming Company, Southfield, Mich.
Filed Apr. 6, 1970, Ser. No. 25,832
Int. Cl. A47c *7/02, 23/00*
U.S. Cl. 297—452 **14 Claims**



A seat construction comprising a frame including a base and a back. Each of the base and back have a frame with spaced siderails and a spring assembly mounted on the frame. Each spring assembly comprises a plurality of longitudinally extending wires, a plurality of transversely spaced wires having intermediate portions extending between the spaced wires and free ends extending beyond the longitudinally extending wires at an acute angle to the intermediate portion. Each spring assembly further comprises a longitudinal wire along each side edge connecting the free ends of said transversely spaced wires. Each spring assembly is resiliently supported on its respective frame.

3,639,003
PROCESS FOR LEACHING METAL VALUES FROM MINERAL-BEARING EARTH MATERIAL

Henry Rush Spedden, and Emil Edward Malouf, both of Salt Lake City, Utah, assignors to Kennecott Copper Corporation, New York, N.Y.

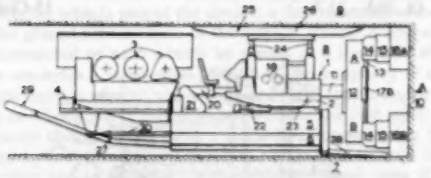
Filed Aug. 22, 1969, Ser. No. 852,373
Int. Cl. E21b *43/28*
U.S. Cl. 299—5 **8 Claims**

A high-pressure stream of leach solution from, for example, a hydraulic monitor, is directed against a mine waste dump or other mass of mineral-bearing material to be leached, for the purpose of dislodging and breaking up the material, while, at the same time, leaching metallic values therefrom. It is preferred that material dislodged by the pressurized leach solution be formed into piles and that other high-pressure streams of leach solution be used to further agitate the piled material and to complete the leaching of metallic values therefrom.

3,639,004
TUNNELING MACHINES

Peter Lockwood, and Gerald R. O. Pentith, both of Darlington, England, assignors to Greenside Machine Company Limited, Darlington, England

Filed Jan. 2, 1970, Ser. No. 308
Int. Cl. E21c *27/24*; **E01g** *3/04*
U.S. Cl. 299—10 **3 Claims**



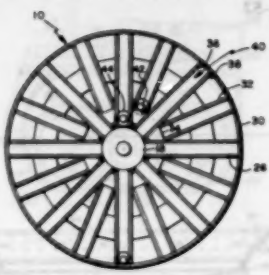
A tunneling machine has a radially extending arm mounted at its center to a rotatably torque shaft. Each half of the arm mounts a respective rotary cutting head which is traversable over that half. In use, the cutting heads are equally spaced from the torque shaft axis, and the torque shaft is rotated through 180° to remove mineral from a face. The arm is then returned to its original position, equally spaced radial positions and a further cutting movement performed. Other cutting procedures may be employed.

3,639,005
APPRATUS FOR BREAKING SHEET ICE

William J. Holm, 26 East Lane, Springfield, Vt.

Filed June 11, 1970, Ser. No. 45,414
Int. Cl. E01h *5/12*
U.S. Cl. 299—25 **7 Claims**

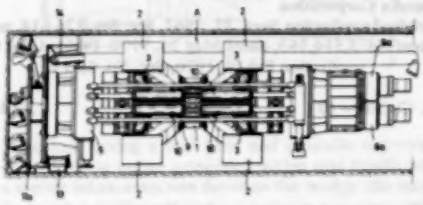
Apparatus is provided for breaking surface ice formed over a snow cover as sometimes develops on ski slopes or the like. A rotary unit, which may be dragged by a tractor, is formed with radial guides in spaced wheels with bars parallel to the axis of the wheels and mounted in the guides for free radial movement. The bars drop sequentially down against the ice surface and fall back again towards the center as the apparatus rotates.



3,639,006
MACHINERY FOR DRIVING TUNNELS, GALLERIES OR THE LIKE

Willi Steufmehl, Erkelenz, Germany, assignor to Maschinen-Und Bohrgerate-Fabrik Alfred Wirth & Co. K.G., Erkelenz, Germany

Filed Feb. 12, 1970, Ser. No. 10,714
Int. Cl. E01g *3/04*
U.S. Cl. 299—31 **11 Claims**



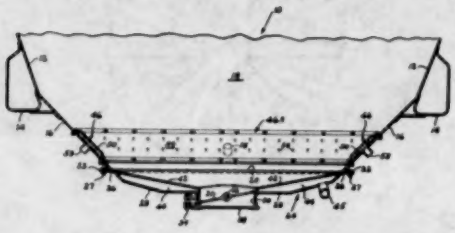
Circular section tunnels are bored out by a stepped series of concentric longitudinally displaced boring heads mounted on separate units, the leading head being circular and of the smallest diameter and succeeding heads being annular and of progressively greater external diameter, such that the total cross-sectional area of the series of heads is equal to the area of the tunnel working face. Each boring head is mounted on a separate frame and is readily interchangeable, the frame clamping and advancing means and the boring heads for each unit being independently hydraulically or electrically driven and controlled from a common power supply and control unit, allowing wide flexibility of operation of the unit. The frame of each successive unit is guided through the tunnel section bored out by the immediately preceding unit and the larger diameter boring head of such unit is located in the rear thereof. With the most usual arrangement of such tunnel boring machines consisting of a leading unit and one follower unit, the mounting of the boring head of the follower unit in the rear portion thereof affords the advantage of most convenient disposal of the spoil.

3,639,007

FLUIDIZING HOPPER SLOPE SHEET PAD ASSEMBLY

Roy R. Dare, St. Charles, and John L. Carney, Jr., St. Louis, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Mar. 4, 1970, Ser. No. 16,276
Int. Cl. B60p 1/62; B61d 7/28; B65q 3/14
U.S. Cl. 302—52 7 Claims



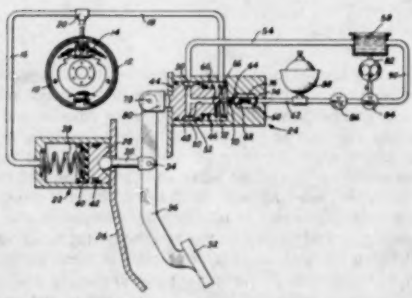
A fluidizing or aerating pad for a covered hopper railway car mounted on a hopper slope sheet immediately above a bottom outlet structure. The fluidizing pad extends across substantially the entire width of individual slope sheets and comprises a flat base sheet in face-to-face contact with the associated slope sheet and a fluid permeable outer member having a peripheral flange secured to the base sheet. The fluid permeable member is formed of a woven wire mesh and is additionally secured to the base sheet at predetermined positions inwardly from the peripheral flange.

3,639,008

POWER BRAKE SYSTEM

Stanley I. MacDuff, Daytona Beach, Fla., assignor to The Bendix Corporation

Original application Sept. 27, 1962, Ser. No. 226,614, now Patent No. 3,514,163, dated May 26, 1970. Divided and this application Feb. 9, 1970, Ser. No. 9,815
Int. Cl. B60t 13/14
U.S. Cl. 303—10 2 Claims



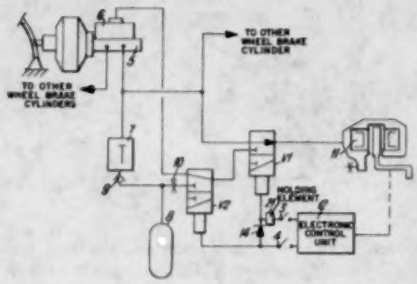
A braking system having a manually operated master cylinder for supplying the energizing force to activate the wheel brakes of a vehicle in the absence of power boost device being inoperative.

3,639,009

ANTISKID BRAKE SYSTEM FOR VEHICLES

Hans-Christoff Klein, Hattersheim, Germany, and James E. Byrne, New Canaan, Conn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 12, 1970, Ser. No. 2,051
Claims priority, application Germany, Jan. 14, 1969, P 19 01 477.8
Int. Cl. B60t 8/00, 8/12
U.S. Cl. 303—21 F 17 Claims



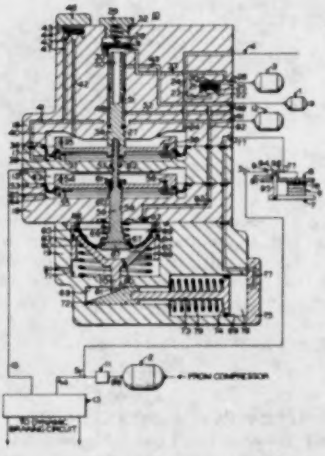
An antiskid system for conventional master cylinder hydraulic brake systems for vehicles in which loss of brake pressure due to repeated discharge of fluid from the master cylinder as the system cycles is prevented by connecting the wheel cylinder to a pressurized reservoir after each reduction in pressure so that pressure can be restored without movement of the master cylinder piston. This is accomplished by means of a valve arrangement responsive to wheel acceleration and deceleration thresholds.

3,639,010

FLUID PRESSURE AND DYNAMIC BRAKE INTERLOCK VALVE WITH VARIABLE LOAD CONTROL

Gary T. Mayer, Deerfield, Ill., and Daniel G. Scott, Apollo, Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Dec. 15, 1969, Ser. No. 885,237
Int. Cl. B60t 8/18
U.S. Cl. 303—22 A 15 Claims



This invention relates to a triple-diaphragm pressure-operated variable-load-type brake control valve for rapid transit vehicles wherein the body of the vehicle is supported

on air springs, the pressure in which is varied to maintain the body at a substantially constant height above the rails irrespective of the load on the body. Furthermore, air spring pressure varies the effective area of that one of the three diaphragms that is subject to brake cylinder pressure whereby the brake cylinder pressure required to effect movement of the brake control valve to a lap position subsequent to any reduction of brake pipe pressure effective on one side of a second one of the diaphragms relative to a substantially constant control reservoir pressure effective on the opposite side of this second diaphragm, varies directly as the load carried on the body of the vehicle. The third diaphragm is subject to a fluid pressure that corresponds to the degree of dynamic brake and acts thereon in the same direction as brake pipe pressure acts on the second diaphragm. Consequently, as the speed of the vehicle diminishes and the dynamic brake fades out, the brake control valve operates to control the blending therewith of the pneumatic brake in such a manner as to bring a rapid transit train, each car of which is provided with this brake control valve, to a proper stop at a predetermined rate of deceleration.

3,639,011

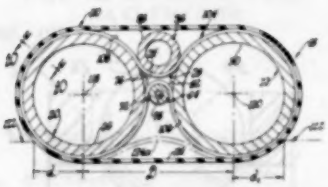
MULTIWHEELED LOCOMOTION DEVICE

Walton W. Cushman, Fraser, Mich., and Martin Tucker, trustee, New York, N.Y.

Filed Sept. 11, 1969, Ser. No. 857,106

Int. Cl. B62d *55/08*

U.S. Cl. 305—35 EB **19 Claims**



A multiwheeled locomotion device has a pair of hubless wheels or rollers for effectively engaging a surface along which the wheels propel the device; a first rotatable wheel or roller placed intermediate of the hubless wheels is operatively connected to such wheels by means of a load belt which also encircles a substantial portion of the periphery of each of the hubless wheels; and second and third reaction-type rollers or wheels are situated generally above the first roller and between the hubless wheels; a plurality of constraining belts looped about the reaction and first rollers tend to draw them together and in so doing cause upper and lower runs of the load belt which pass between the reaction and first rollers to be urged toward each other thereby creating a tension in the load belt.

3,639,012

TREAD BELT AND ASSEMBLY

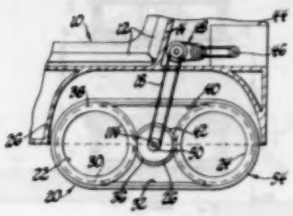
Walton W. Cushman, Fraser, Mich., and Martin Tucker, as trustee, New York, N.Y.

Filed Dec. 4, 1969, Ser. No. 881,975

Int. Cl. B62d *55/24*

U.S. Cl. 305—35 EB **15 Claims**

An endless tread belt adapted to pass about two or more surface locomotion wheels is formed of an elastomeric material and has a plurality of spaced cleat portions extending generally transversely of the tread belt body; a generally medially situated constraining belt is contained generally within the belt body and positioned so as to have the medial portion thereof coextensive with the pitch diameter of the belt body, the constraining belt or strap is effective for assuring tracking means formed on the tread belt to be closely received within cooperating guide means formed in the surface locomotion wheels; the sides of the tread belt are provided with integrally formed passage-type locking means for



receiving therein fingerlike locking members of side closure walls connectable to the tread belt at opposite sides thereof in order to form an enclosed chamber containing the locomotion wheels.

3,639,013

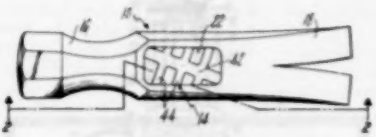
HAND TOOL WITH SELF-LOCKING WEDGE CONNECTION

George W. Merrow, Bloomfield, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed Aug. 3, 1970, Ser. No. 60,355

Int. Cl. B25g *3/28*

U.S. Cl. 306—33 **10 Claims**



A hand tool having a tool head and a handle is provided with a self-locking wedge embedded within said handle to effect a secure interconnection between the wedge, the handle and the tool head. The self-locking wedge is a single multielement member of high shear strength having a tapered central body and a plurality of integral wedge-shaped side arms intersecting the central body and projecting outwardly from opposite sides thereof. At least one of the side arms extends from the central body for a greater distance on one side thereof than on the opposite side thereof. Locking shoulders projecting from the central body are disposed inwardly of the side arms and cooperate with the side arms to interlockably retain the resilient grained structure of the handle and restrict removal of the wedge therefrom.

3,639,014

DAMPED BEARING

Herbert Sixsmith, Oxford, England, assignor to National Research Development Corporation, London, England

Filed Mar. 24, 1969, Ser. No. 809,774

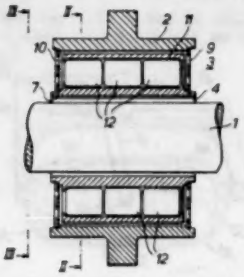
Claims priority, application Great Britain, Mar. 26, 1968, 14,555/68

Int. Cl. F16c *17/16*

U.S. Cl. 308—9 **10 Claims**

A bearing assembly, in which the bearing is located between the fixed and rotatable members in such a manner

that it can adjust to a certain extent to radial movement of the movable member, is damped against vibration or shock

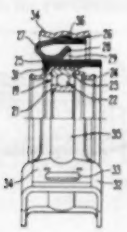


by housing a seismic mass in the bearing with limited freedom of radial movement.

3,639,015
RESILIENT MOUNTING ARRANGEMENT

Otto Robert Maas, Russelsheim/Hessen, Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed May 4, 1970, Ser. No. 34,438
Claims priority, application Germany, May 10, 1969, G 69 19 078.9
Int. Cl. F16c *35/06*
U.S. Cl. 308—26 **3 Claims**



A propeller shaft bearing is carried in an inner ring connected to an outer ring by a resilient annular membrane. The outer ring is secured to a vehicle body portion. An annular member extends from one of the rings towards the other and upon relative displacement of the rings resiliently engages the other ring to provide an increased spring rate for the membrane to resist further relative displacement of the rings.

3,639,016
ROLLING CONTACT BEARING SEALS

Claude Raymond Bourgeois, Annecy (Haute Savoie), France, assignor to Societe Nouvelle de Roulements, Annecy (Haute Savoie), France

Filed Mar. 12, 1970, Ser. No. 19,020
Claims priority, application France, Mar. 12, 1969, 6907020
Int. Cl. F16j *15/32*
U.S. Cl. 308—187.2 **5 Claims**

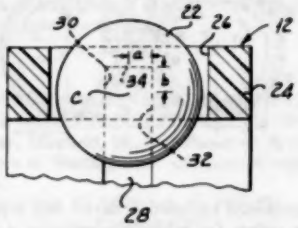
Seal for ball and roller bearings, of the type wherein the seal consisting of rubber or similar material is associated with one of the bearing races and comprises at least one lip coacting with an associated surface of the other race, such as a baffle plate, characterized in that the seal comprises an annular portion or bead force fitted to a surface associated with the race receiving same, thus providing between the lip or lips of said seal and the surface associated therewith a

chamber adapted to be filled with a substance for improving the frictional contact while isolating said seal.

3,639,017
STABLE BALL CAGE

George J. Schoen, Danbury, and Lewis W. McKee, Arrowhead Point, both of Conn., assignors to The Barden Corporation, Danbury, Conn.

Filed Mar. 6, 1970, Ser. No. 17,525
Int. Cl. F16c *33/38*
U.S. Cl. 308—201 **13 Claims**



A bearing cage for a ball bearing in which the annular cage body has a plurality of radially extending ball pockets and a centrally located annular groove in its inner surface or in its outer surface, the depth of the groove relative to its width being sufficiently great that in operation of a ball bearing incorporating the cage the balls engage the cage only at the radially extending edges formed by the sides of the groove at the pockets and not at the edge formed by the base of the groove at the pockets so as to drive the cage by forces which are at an angle to the direction of cage rotation.

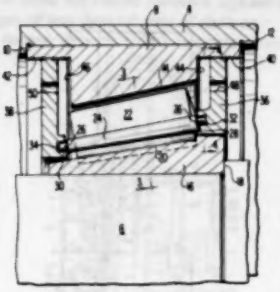
3,639,018
TAPERED ROLLER BEARING ASSEMBLY

Donald F. Wilkes, Albuquerque, N. Mex., assignor to Rolamite Incorporated, San Francisco, Calif.

Continuation-in-part of application Ser. No. 762,013, Sept. 24, 1968, now Patent No. 3,527,295, dated Mar. 2, 1971.
This application Oct. 7, 1970, Ser. No. 78,903
Int. Cl. F16c *19/14*
U.S. Cl. 308—214 **15 Claims**

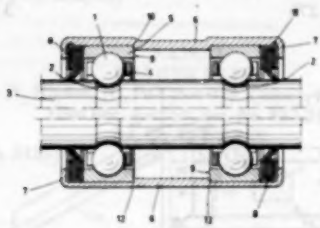
A tapered roller bearing assembly in which load-bearing rollers are spaced apart from each other by idler rollers. The idler rollers are supported at their opposite ends in bearing races which are mounted on the outer bearing race for the

load rollers. A shoulder adjacent the inner bearing surface for the load rollers cooperates with a conical surface on the



end face of the load rollers to urge the load rollers to remain in alignment as they progress around the bearing races.

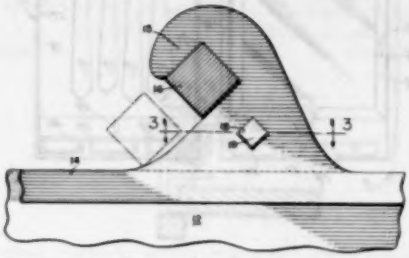
3,639,019
RADIAL BALL BEARINGS
Georg Schaeffler, Herzogenaurach, Germany, assignor to Industriewerk Schaeffler OHG, Herzogenaurach, Germany
Filed June 15, 1970, Ser. No. 45,979
Claims priority, application Germany, July 1, 1969, G 69 25 932.1; Aug. 22, 1969, G 69 33 092.3
Int. Cl. F16c *19/08*
U.S. Cl. 308—193 **7 Claims**



A novel radial ball bearing particularly adapted for mounting a water pump shaft provided with two rows of balls spaced from each other and which roll in grooves in the shaft to be mounted.

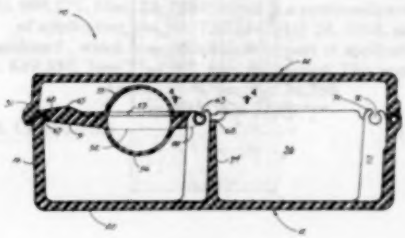
3,639,020
SUSPENSION FILE
Sydney M. Nesbitt, 4310 S.W. 104th Ave., Miami, Fla.
Filed Nov. 22, 1968, Ser. No. 778,050
Int. Cl. A47b *63/00;* **B42f** *15/00*
U.S. Cl. 312—184 **6 Claims**

In the suspension of a plurality of file folders, such as required in an office filing system an elongated horizontally disposed metal or wooden rod, which is square or rectangular in cross section, is provided, and is installed between the walls of a standard metal stationary cabinet or the walls of a room or closet and fixed in any desired position. This square rod is fixed with its diagonal dimension in substantially vertical position and will accommodate a companionately shaped hook hanger member in a close-fitting manner. This fit is loose enough to permit lateral sliding movement of the hook hanger member along the length of the horizontally disposed square rod, but is snug enough to prevent any substantial rotation or tilting movement of the hook hanger member. The hook of each such hanger member is fixed or formed in the center of the upper portion of the file folder. In the filing



of exceptionally heavy and bulky material in the file folder to be carried by the hanger member, such as large bulky blue prints, hospital X-ray negatives, computer print outs or the like, my file is especially useful.

3,639,021
CLOSURE FOR FLY TACKLE FISHING BOX
Willard E. Fee, One W. Santa Inez Ave., San Mateo, Calif.
Filed June 8, 1970, Ser. No. 44,286
Int. Cl. A47b *81/00;* **B42f** *21/00*
U.S. Cl. 312—234.1 **4 Claims**

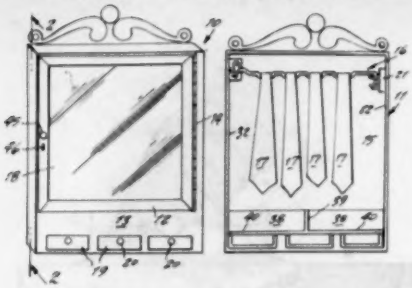


A fishing tackle box having a pan-shaped compartmented body open at the top, and separate openable covers for each compartment. Said covers have a shelf for receiving a name plate, and a well for receiving a fishing tackle fly. Seated thereover is a removable transparent window. Pins mounted on the covers engage bearings on the compartment walls. A depression on the front edge of the covers receives a horizontal protruding ridge, securing cover closure.

3,639,022
NECKTIE RACK AND ACCESSORY CHEST
Frank S. Elmo, 1505 Idaho St. #0, LA Habra, Calif.
Filed Apr. 28, 1970, Ser. No. 32,605
Int. Cl. A47f *5/08;* **A47b** *67/00*
U.S. Cl. 312—245 **2 Claims**

A case for storing a selection of neckties, the case having a pivotable front door having a mirror upon the outerside

thereof so that a gentleman can see himself while tying a necktie, and the case including drawers for containing bow neckties, cuff links, tie pins and associate jewelry.

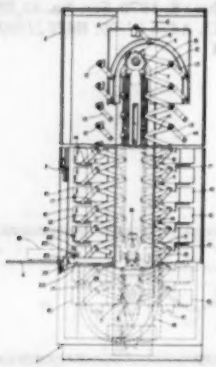


3,639,023

POWER FILE LEVELING DEVICE

Walter G. Anders, and Jon S. Skolmutch, both of Canton, Ohio, assignors to Diebold Incorporated, Canton, Ohio

Filed Nov. 5, 1970, Ser. No. 87,228
Int. Cl. A47b *49/00*
U.S. Cl. 312—268 **17 Claims**



A leveling control mechanism for a power filing appliance wherein a number of pan assemblies travel on an endless conveyor in a continuous path. The leveling control mechanism stops the conveyor so that any selected pan will have a location within one thirty-second of an inch of a desired location regardless of the direction of movement of the conveyor or of unbalanced loading of the conveyor pans or system.

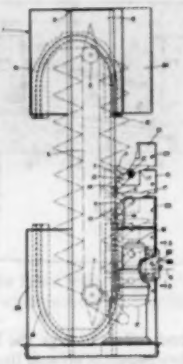
3,639,024

LEVELING DEVICE FOR POWER FILE

Walter G. Anders, Canton, Ohio, assignor to Biebold, Incorporated, Canton, Ohio

Filed Nov. 16, 1970, Ser. No. 89,833
Int. Cl. A47b *49/00*
U.S. Cl. 312—268 **11 Claims**

A leveling control mechanism for a power filing appliance wherein a number of pan assemblies travel on an endless conveyor in a continuous path. The leveling control mechanism has adjustable and movable components mounted on the file frame or support and a simple single actuator mounted on each pan for directly controlling the stopped location of such pan. The mechanism stops the conveyor so that any selected pan will have a location within one thirty-second of an inch of a desired location regardless of the direction of movement of the conveyor or of unbalanced loading of the conveyor pans or system.

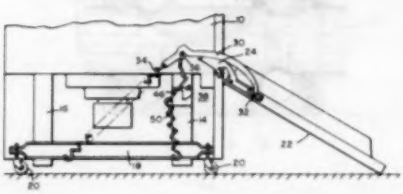


3,639,025

FREESTANDING APPLIANCE WITH BREAK-OPEN DOOR

Edward H. Donselman, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 3, 1969, Ser. No. 795,906
Int. Cl. A47b *81/00*
U.S. Cl. 312—276 **3 Claims**



A freestanding appliance such as a portable dishwasher having a swing-down access door has means which resists opening of the door beyond its normally open horizontal position and which yields when a downward force is imposed upon the door which exceeds that downward force imposed upon the door in its normal use and which would tend to cause the appliance to tip but for the yielding, which permits the door to swing down until stopped by the floor.

3,639,026

STEEL SHELVING CLOSURE

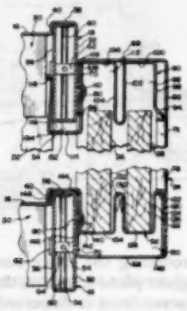
Irwin J. Ferdinand, Glencoe, and Irwin R. Kulbersh, Morton Grove, both of Ill., assignors to The Hirsh Company, Skokie, Ill.

Filed July 27, 1970, Ser. No. 58,356
Int. Cl. A47b *81/00*
U.S. Cl. 312—295 **8 Claims**

A frame assembly for sliding doors is disclosed which is adjustably secured to a desired level around the front openings of knockdown steel shelving having a plurality of vertically spaced shelves supported by corner posts. Each shelf has front and rear flanges extending above and below the shelf

surface with cutout corners engaging the supporting posts and defining therebetween the front openings. The assembly includes a frame member having bottom and top box-type longitudinal flanges and a pair of elongated, channeled clip members to hold the frame member against and between the front flanges of any desired pair of shelves.

Detent means are provided between contiguous walls of



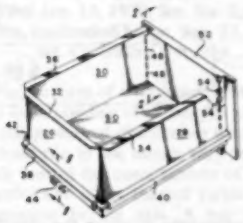
the flanges of the frame member and the walls of the clip members. The upper clip member engages the upper shelf flange in a vertically slidable relationship so that the assembly, with or without the sliding doors within the channels, can be moved in a vertical plane to disengage the lower clip member from the shelf flange. In this position the upper clip member is readily disengaged from the upper shelf flange by lowering the assembly.

3,639,027

DRAWER FRAME

Joseph W. Higdon, Jr., P.O. Box 978, Quincy, Fla.

Filed Dec. 4, 1969, Ser. No. 882,212
Int. Cl. A47b *88/00*
U.S. Cl. 312—330 **13 Claims**



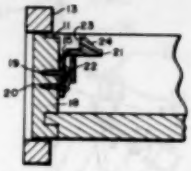
This invention relates to the construction of drawers for chests, desks, etc. A drawer frame is injection molded of plastic material in flattened blank form. The blank includes weakened zones dividing the blank into back and side sections, the lower part of the frame is provided with an outwardly projecting rib assembly including noncontinuous rib sections which are discontinued at the weakened zones to permit folding of the blank into a U-shaped frame. The rib assembly forms an interior longitudinal groove adapted to support the side and end edges of a drawer bottom. A drawer front dovetails with the side terminals and is secured thereto. A drawer guide is formed in the back of the drawer frame.

3,639,028

DRAWER STOP

Colon C. Black, Muskegon, Mich., assignor to E. H. Sheldon and Company, Muskegon, Mich.

Filed June 22, 1970, Ser. No. 47,965
Int. Cl. A47b *95/00*
U.S. Cl. 312—348 **4 Claims**



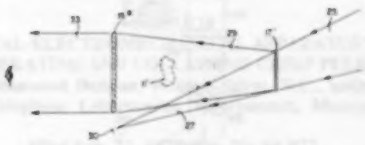
In combination with a drawer having a rear wall recessed to provide a rear abutment, a flexible plastic stop member has a lower portion anchored to the rear wall below its top and has a stop portion extending above the rear wall for engagement with a frame member at the forward end of the drawer opening, the stop member having a rearwardly extending brace fitting within the recess and engaging the abutment at the rear of the recess.

3,639,029

ONE-STEP ORTHOSCOPIC IMAGE RECONSTRUCTING TECHNIQUE FOR A HOLOGRAM CONSTRUCTED THROUGH A DISPERSIVE MEDIUM

Kenneth A. Haines, Middletown, Del., assignor to Holotron Corporation, Del.

Continuation-in-part of application Ser. No. 875,768, Nov. 12, 1969, which is a continuation-in-part of application Ser. No. 809,171, Mar. 21, 1969, which is a continuation-in-part of application Ser. No. 730,337, May 20, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 649,337, June 27, 1967, now abandoned. This application Apr. 1, 1970, Ser. No. 24,758
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **6 Claims**



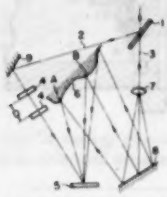
A technique for reconstructing an orthoscopic image of an object from a hologram that has been constructed of that object through a radiation dispersion medium. The technique includes reconstructing from the hologram a first order diffracted beam with a wave front conjugate to that of the dispersed object bearing wave front recorded on the hologram. The first order diffracted beam is reconstructed in a manner to form in real space an image of the dispersive medium used during the hologram construction. A phase conjugate of the dispersive medium used in the hologram construction is positioned in the reconstructed beam. An orthoscopic image of the object is thereby formed.

3,639,030

HOLOGRAPHIC METHOD OF FARMING CONTOUR LINES IN AN IMAGE UTILIZING LIGHT OF LIMITED COHERENCE LENGTH

Tadao Tsuruta, and Yoshinobu Ito, both of Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed June 2, 1970, Ser. No. 42,841
Claims priority, application Japan, June 24, 1969, 44/49298
Int. Cl. G02b *27/00*; G01c *11/00*
U.S. Cl. 350—3.5 1 Claim



This invention provides a device for forming hologram. Fabry-Perot etalon is interposed in the parallel reference light rays. The distance D of Fabry-Perot etalon is made substantially equal to the coherent length L of the light to be used, so as to produce a number of reference light ray groups having a light path difference of 2D for increasing the depth of reproduction.

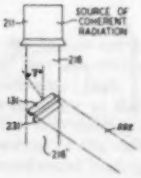
Further, by making the distance D satisfying 2D>L, contour lines in terms of 2D are formed for measuring the depth of an object.

3,639,031

HOLOGRAM COPYING FOR RECONSTRUCTION OF AN ABERRATION-FREE WAVEFRONT AT A WAVELENGTH DIFFERING FROM THE COPYING WAVELENGTH

Lawrence H. Lin, Chatham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 24, 1970, Ser. No. 75,202
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 5 Claims



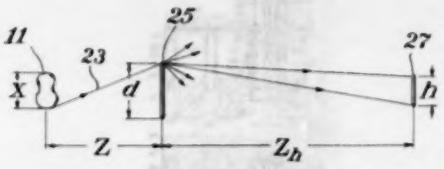
A first thick hologram of the wave front from an object is formed at a first wavelength to which a first hologram-recording medium is sensitive. A second hologram is recorded on a second recording medium sensitive to a second wavelength by placing the second recording medium adjacent the first and illuminating the first hologram with radiation at the second wavelength. This second hologram can then be illuminated with radiation of the first wavelength to reconstruct with minimum aberration the wave front associated with the object recorded on the first hologram.

3,639,032

TECHNIQUES FOR HOLOGRAM DATA REDUCTION

Kenneth A. Haines, Runnymede, Del., assignor to The Battelle Development Corporation, Columbus, Ohio

Continuation-in-part of application Ser. No. 730,337, May 20, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 649,337, June 27, 1967, now abandoned. This application Mar. 21, 1969, Ser. No. 809,171
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 30 Claims



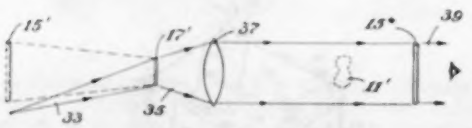
A technique for reducing the space-bandwidth product, recorded at the hologram plane in the method of holography in which the object wave front is dispersed before reaching the hologram plane such that the space-spatial frequency product of interference fringes recorded at the hologram plane is reduced without reducing the angle of viewing the image upon reconstruction.

3,639,033

HOLOGRAPHIC DATA REDUCTION WITH PERIODIC DISPERSIVE MEDIUMS AND METHOD OF ORTHOSCOPIC IMAGE RECONSTRUCTION

Kenneth A. Haines, Middletown, Del., assignor to The Battelle Development Corporation, Columbus, Ohio

Continuation-in-part of application Ser. No. 809,171, Mar. 21, 1969, which is a continuation-in-part of application Ser. No. 730,337, May 20, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 649,337, June 27, 1967, now abandoned. This application Nov. 12, 1969, Ser. No. 875,768
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 12 Claims



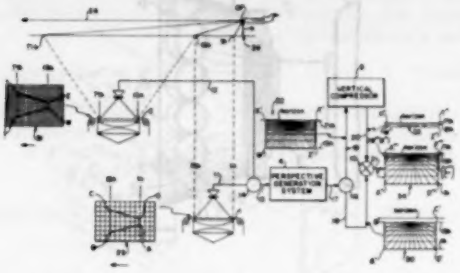
A method of holography in which the object wavefront is dispersed before reaching the hologram detector for recordation thereon and an image-carrying diffracted wavefront reconstructed from the hologram detector is dispersed in a manner related to the dispersion of the object wave front during the hologram's construction. Several specific techniques are disclosed for reconstructing an orthoscopic (actual) image of the object. A preferred technique for reconstructing an orthoscopic image includes making from such a hologram a second hologram without dispersion of the wave front recorded on the second hologram. Dispersion techniques for reducing the space-spatial frequency product of the information holographically recorded are also disclosed wherein a periodically phase-varying diffusion plate etched on one side thereof is utilized for wave front dispersion.

3,639,034

OPTICAL PERSPECTIVE GENERATION SYSTEM

Joseph A. La Russa, Yonkers, N.Y., assignor to Farrand Optical Co., Inc., New York, N.Y.

Filed Apr. 24, 1970, Ser. No. 31,716
Int. Cl. G02b 13/08
U.S. Cl. 350—31 19 Claims



An optical image generation system, for use in aircraft and other simulators, including two or more perspectiveless input objects each contributing a different component to a composite output image having perspective. The perspectiveless input objects, each to a different scale, are passed through a perspective generation system which is constructed in accordance with Scheimpflug principles. At least one of the component output images from the perspective generation system resulting from the input object is compressed, by an anamorphic lens system, before being combined to form the composite output image. The compression contributed by the anamorphic lens system in combination with the scale difference between the perspectiveless input objects and the power of the perspective generation system is such that the perspective generated in each component is the same. When those components are combined, therefore, into the composite output image, that composite output image has a single correct perspective.

3,639,035

SYNTHETIC RESIN STRUCTURES FOR LIGHT CONDUCTION AND PRODUCTION THEREOF

Masanori Irie, Amagasaki-shi, Japan, assignor to Nippon Selfoc Kabushiki Kaisha, Tokyo-to, Japan

Filed Jan. 13, 1970, Ser. No. 2,669
Claims priority, application Japan, Jan. 23, 1969, 44/4957
Int. Cl. G02b 5/14, 1/04
U.S. Cl. 350—96 R 10 Claims

A polymer in the form of a transparent bar or fiber having bridges due to ionic bonding of carboxylic groups and metals and having a compositional distribution wherein the concentrations of at least two of the metals vary progressively from the central axis toward the outer surface of the bar or fiber, whereby the refractive index thereof varies progressively in directions transverse to the axis. A bar or fiber of this character can be produced by immersing a polymer bar or fiber having bridges due to ionic bonding of carboxylic groups and metals in a medium containing ions of at least one other metal different from any of the first-mentioned metals to cause ions of the metals originally in the resin body to be substituted by ions of the other metal.

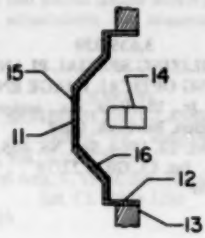
3,639,036

LIGHT-REFLECTIVE WHEEL COVERS

Edward J. Rosebach, Jr., 48 Mill St., Abington, Mass.

Filed Apr. 13, 1970, Ser. No. 27,830
Int. Cl. G02b 5/12
U.S. Cl. 350—97 6 Claims

A conventional vehicle hubcap is provided on its inside surface with a light reflective means so that when the hubcap is detached from its normal operative position on a vehicle it can act as a light-reflecting safety device. A preferred hubcap



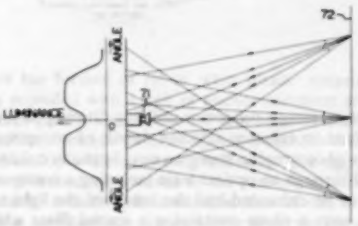
support means for supporting the hub cap when used as a safety device comprises a compact plastic stand.

3,639,037

DIRECTIONAL OR REFLEXIVE PROJECTION SCREEN

Yoshio Fukushima, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Feb. 25, 1970, Ser. No. 13,952
Claims priority, application Japan, Feb. 28, 1969, 44/15573
Int. Cl. G03b 21/60
U.S. Cl. 350—126 2 Claims



A directional or reflexive projection screen having a reflecting surface consisting of at least two or more kinds of glass beads having different refractive indexes. The optimum image viewing area may be arbitrarily adjusted.

3,639,038

OPTICAL-ELECTROMECHANICAL APPARATUS FOR GENERATING AND COLLAPSING CHIRP PULSES

Robert Stanwood Duncan, Winston-Salem, N.C., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 21, 1970, Ser. No. 66,021
Int. Cl. G02f 1/34
U.S. Cl. 350—161 6 Claims

A beam of collimated light is reflected from a torsionally pulsed acoustic delay medium. Successive portions of the light reflected from the medium pass through a nonuniform transmission grating to a photomultiplier device. The device

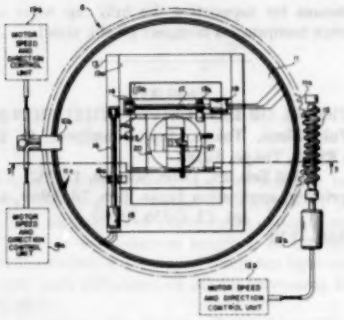
output comprises either a chirp pulse or a collapsed chirp pulse depending on the torsional pulse applied to the medium and the orientation of the grating.

3,639,039

APPARATUS UTILIZING SPATIAL PLANE FILTERING FOR PERFORMING OPTICAL IMAGE ENHANCEMENT

Joseph E. Rhodes, Jr., Marietta, Ga., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Oct. 22, 1964, Ser. No. 405,802
Int. Cl. G02b *27/38*
U.S. Cl. 350—162 SF **3 Claims**



An optical image processor utilizing filtering in the spatial image plane to enhance selected details of an optical image such as a photographic transparency. Spatially coherent light is passed through an optical train including a transparency of a scene to be enhanced and the image of the light source is focused onto a plane containing a spatial filter which may consist of a slit of variable dimension and orientation. The geometric patterns of the scene on the transparency function as diffraction gratings for the coherent light and the desired diffraction patterns are selected by a spatial filter of the appropriate dimension and location. The filter may be rotated to provide a cyclically recurring enhanced image.

ERRATUM

For Class 350—184 see:
Patent No. 3,638,996

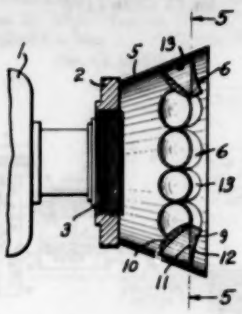
3,639,040

LENS SYSTEM FOR COLOR PHOTOGRAPHY

John Tylka, Sr., 1865 N. Curson Ave., Hollywood, Calif.

Filed July 27, 1970, Ser. No. 58,541
Int. Cl. G02b *5/02, 27/00*
U.S. Cl. 350—193 **7 Claims**

The color lens system includes a main objective lens and an annular series of independent color lenses positioned forwardly of the main objective lens; the inner diameter of the annular series of independent color lenses being equal to or slightly greater than the diameter of the main objective lens. Prismatic lenses are provided for each color lens, which lenses collect light rays from the object being photographed and direct the light rays to the color lenses, the rays from the color lenses being directed to the main objective lens. The color rays pass through the main objective lens and the focal length of the main objective controls the focal point of the



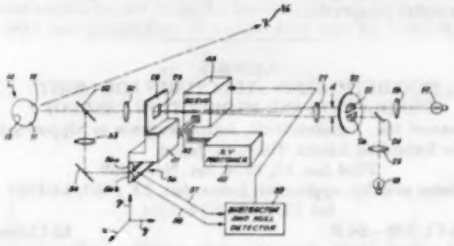
color rays. The color system uses all colors of the spectrum and results in an improved color balance with resultant flatness of field to the edge of the aperture.

3,639,041

SYSTEM AND METHOD FOR SCANNING THE DEPTH OF THE OPTIC FUNDUS

Tom N. Cornsweet, Atherton, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

Filed Sept. 21, 1970, Ser. No. 73,990
Int. Cl. A61b *3/10*; **G01b** *11/30, 9/00*
U.S. Cl. 351—14 **8 Claims**



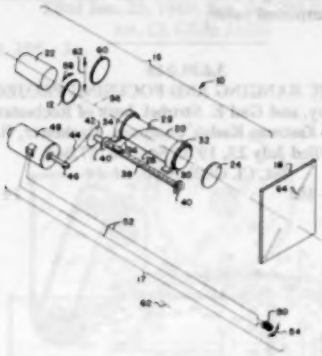
A system and method for obtaining a depth profile of the fundus of the eye in which first and second alternately excited light sources image an aperture on a portion of the optic disk. The refractive power of the eye is held approximately constant by having the eye look at a fixation point. A detector is provided for sensing the degree of overlap of the aperture images due to the first and second light sources. In one embodiment the aperture is displaced in a Z-direction with respect to the eye until the images of the aperture completely overlap. The aperture is then successively displaced horizontally in an X-direction and/or vertically in a Y-direction with respect to the eye and in each position the aperture is adjusted in the Z-direction until the first and second images of the aperture completely overlap. The positions of the aperture where the first and second images thereof overlap correspond to the depth of the respective portions of the optic fundus from any arbitrary point at the front of the eye.

3,639,042

APPARATUS FOR MEASURING THE ACUITY OF LOW-VISION PATIENTS

Bernard Grolman, Worcester, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed June 10, 1970, Ser. No. 45,190
Int. Cl. A61b 3/02
U.S. Cl. 351—30 5 Claims



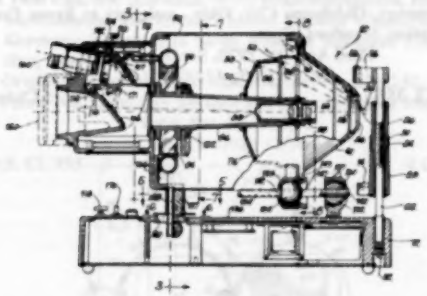
An optical system for measuring the acuity of a low-vision patient has a variably magnified image of a reference character displayed on a rear vision screen. The image is effectively rotatable in order to provide the operator with a verification of the response of the patient.

3,639,043

AN ADJUSTABLE HOUSING FOR APPARATUS FOR DETERMINING CORNEA CONTOUR

Malcolm G. Townsley, Park Ridge, Ill., assignor to The Plastic Contact Lens Company, Chicago, Ill.

Division of Ser. No. 778,965, Nov. 26, 1968
Filed Sept. 24, 1970, Ser. No. 75,131
Int. Cl. A61b 3/00; F16l 11/12
U.S. Cl. 351—38 4 Claims



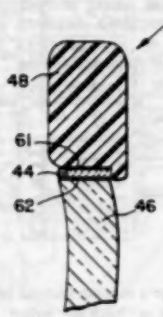
An apparatus for determining the contour of the human cornea comprising a substantially opaque target having a plurality of light-transmitting gaps through which light beams can be projected onto the eye of a patient. The pattern of light beams reflected in the eye can then be photographed with the particular configuration providing a basis for determining mathematically the contour of the eye. The target structure comprises a pair of hollow plastic shells provided with an opaque coating. The coating is removed in selected areas to provide the light transmitting gaps. The shells are mounted at one end of an adjustable housing, and a camera and through-the-lens focusing means are located at the opposite end of the housing. The adjusting means comprise double joint ball and socket means which permit the operator to make finite adjustments for accurate alignment while viewing the eye.

3,639,044

SEMIRIMLESS GLASSES

Farnham Blair, Alexandria, Va., assignor to Benton Blair, Sanibel Island, Fla., a part interest

Filed Aug. 5, 1970, Ser. No. 61,097
Int. Cl. G02c 1/04
U.S. Cl. 351—103 4 Claims



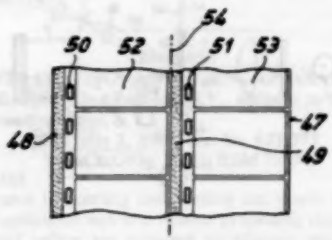
A brow bar formed of zyl or other plastic material, or of metal, is provided with a pair of anchor members at the opposite sides of the center thereof and secured thereto, the bottom of each anchor member having a cushion member affixed thereto by a thermosetting adhesive. The upper edges of a pair of lenses are secured to the cushion members by a thermoplastic adhesive. In a modification of the invention, the cushion members are secured directly to the brow bar by the thermosetting adhesive.

3,639,045

FILMSTRIP

Hildegard Haefeli, Fribourg, Switzerland, assignor to Calottan AG, Basel, Switzerland

Filed Nov. 1, 1967, Ser. No. 679,886
Claims priority, application Switzerland, Nov. 10, 1966, 16216/66
Int. Cl. G03b 31/02
U.S. Cl. 352—37 2 Claims



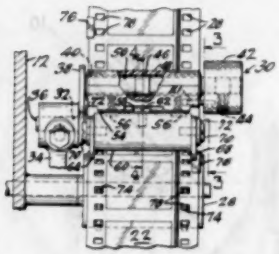
The invention involves a filmstrip which includes at least one strip of picture film, at least one line of perforations and

at least one soundtrack. The filmstrip is dimensioned and arranged so that for a filmstrip width of 35 mm. the picture strip width exceeds 20.9 mm., for a strip width of 17.5 mm. it exceeds 10 mm., and for a strip width of 16 mm. it exceeds 9.7 mm.

3,639,046
PICKOFF DEVICE

Angelo Boudouris, Sylvania, and Harold M. Plumadore, Toledo, both of Ohio, assignors to Eprad Incorporated, Toledo, Ohio

Filed Nov. 3, 1969, Ser. No. 873,394
Int. Cl. G03b *21/50*
U.S. Cl. 352—92 **11 Claims**

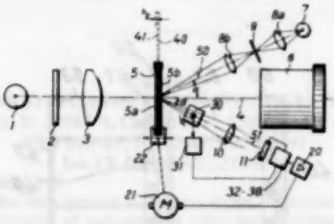


A pickoff device for a motion picture projector can be substituted directly for a backup roller associated with a sprocket of the projector. The pickoff device can be installed without modification in almost any commercially available projector produced in the United States. When a conducting tab or strip on the motion picture film completes a circuit between the pickoff device and the sprocket, an impulse is provided for external controls which can change over the film to a second projector, lower or raise the lights, background music, or curtain, etc.

3,639,047
AUTOMATIC FOCUSING DEVICE FOR SLIDE PROJECTORS

Werner Holle, Wetzlar, Germany, assignor to Ernst Leitz GmbH, Wetzler, Germany

Filed May 11, 1970, Ser. No. 36,024
Claims priority, application Germany, Sept. 17, 1969, P 17 97 347.6
Int. Cl. G03b *3/100*
U.S. Cl. 353—101 **5 Claims**

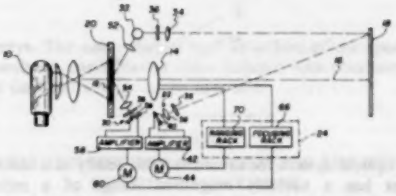


In a slide projector means are provided for projecting a light beam obliquely onto one face of the slide from which it is reflected to a photoelectric receiver. Scanning means in the path of the light beam guide the reflected beam in cycles to the receiver in such a manner that the reflections from the cover glass remote from the slide face whereon the light beam is projected are the first in each cycle to impinge on the photoelectric receiver. A bistable multivibrator is connected to the receiver which multivibrator is set in response to the pulses from the receiver exceeding a predetermined threshold value and is reset at the end of the cycle by a reference pulse. And means are provided which initiate the motion of a motor for displacing the slide along the optical axis in dependence on the time interval between successive setting and resetting pulses when this time interval differs from a predetermined value.

3,639,048
AUTOMATIC RANGING AND FOCUSING PROJECTOR

Paul R. Heaney, and Gad E. Strubel, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 23, 1970, Ser. No. 57,662
Int. Cl. G03b *3/00, 21/14*
U.S. Cl. 353—101 **14 Claims**

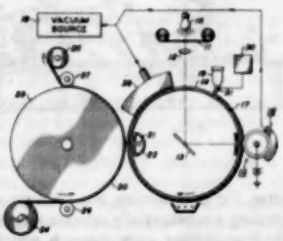


A projector having an optical ranging system for automatically optically sensing the screen-to-lens distance and in response thereto establishing a predetermined film-to-lens distance for placing a projected film image in focus. The projector further has an optical focusing system operative in conjunction with the optical ranging system for sensing the established predetermined film-to-lens distance in the projector, and if any change occurs therein to automatically move the projection lens and/or film to refocus the projected film image.

3,639,049
COPY SYSTEM

Warren L. Rhodes, Rochester, N.Y., and Vernon L. Marquart, Oklahoma City, Okla., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 28, 1970, Ser. No. 67,812
Int. Cl. G03g *15/00, 15/14*
U.S. Cl. 355—3 **5 Claims**



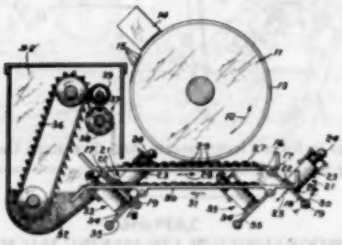
A rapid copy-making system for producing copies for example on photographically slow material such as a diazo, vesicular "Kalvar" or contact speed silver halide by producing an intermediate image from photoelectrophoretic material and more or less immediately using this intermediate

image to contact print the slow photographic material. A separate light source of high intensity exposes the recently created photoelectrophoretic intermediate image for imaging the photographically slow material.

3,639,050
PARTICLE-APPLICATING DEVICE

Karel Jan Staller, Rutherford, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Jan. 22, 1969, Ser. No. 793,034
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **7 Claims**

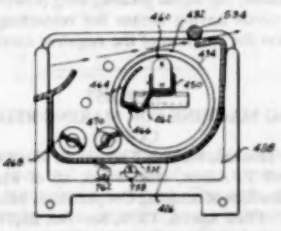


A particle-applicating device for printing apparatus having a printing surface on which is formed electrical or magnetic charge patterns for attracting the particles. A first flat vibrating plate is provided proximate to the printing surface and is pivotally coupled to a vibration generating arrangement. A particle dispenser is arranged to deposit, near one end of the vibrating plate, successive uniform quantities of particles to be applied to the charge pattern. The vibrating motion imparted to the plate enables a uniform movement of the particles along the plate's upper surface and a uniform projection of the particles onto the printing surface situated thereabove. A second vibrating plate and arrangement is provided below the first plate to collect the unattracted particles and return them by oppositely directed vibratory motion to the particle dispensing area.

3,639,051
ELECTROSTATIC COPIER

E. Paul Charlap, Scarsdale, N.Y.; Fritz Baumgarten, Giessen-Heuchelheim, and Lothar Fischer, Giessen Wiesck, both of Germany, assignors to Savin Business Machines Corporation, New York, N.Y.

Original application June 30, 1964, Ser. No. 379,232, now Patent No. 3,490,843. Divided and this application Mar. 3, 1969, Ser. No. 823,225
Int. Cl. G03g *15/08*
U.S. Cl. 355—3 **4 Claims**

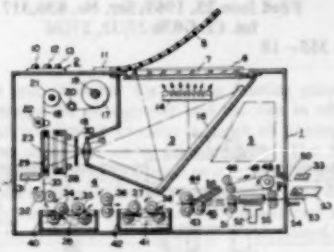


A dry developer system for applying toner particles to copy material in which a sheet of copy material carrying a latent electrostatic image is conveyed face down past a serrated roller provided with magnetic means for holding particles of magnetic material carrying toner so oriented as to brush the surface of the copy material in a direction opposite to the direction of the advance of the material. The developer system further comprises a clapper for holding the copy material into contact with the particles on the roller.

3,639,052
APPARATUS FOR ELECTROPHOTOGRAPHICALLY PRODUCING AN IMAGE ON A SINGLE SHEET OF MICROFILM

Toshiharu Sasaki, Toyonaka-shi; Ryuzo Miyano, Osaka-fu, and Yasutaka Nakajima, Moriguchi-shi, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Kadoma, Osaka, Japan

Filed July 8, 1969, Ser. No. 839,843
Claims priority, application Japan, July 9, 1968, 43/49293; 43/94344; 43/49294; 43/49295; 43/49296; July 23, 1968, 43/52646; Aug. 28, 1968, 43/62166
Int. Cl. G03b *15/04*
U.S. Cl. 355—3 **14 Claims**



A photographic apparatus for producing a microvisible image of any original on an electrophotosensitive film by means of an electrophotographic method.

The apparatus includes means for positioning a successive film having a transparent organic photoconductive layer thereon in a predetermined path and charging means for applying a uniform electrostatic charge to a portion of the film. The charged portion is exposed to a microprojected image of the original through a light source and an optics system to form an electrostatic microlatent image on the portion. Driving means is provided for intermittently advancing said film by a length equivalent essentially to the longitudinal length of the portion. Means for cutting then cuts the portion from the successive film into a single sheet of film. Processing means then transports the single sheet of film having said latent image through processing agents including a liquid developer and a liquid fixer, thereby producing a visible image from said latent image. Takeout means then ejects the single sheet of film having said visible image from the processing means to an outlet.

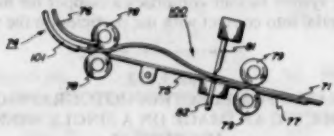
3,639,053
WEB CUTTING AND FEEDING APPARATUS

Merton R. Spear, Jr., Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed May 2, 1969, Ser. No. 821,377
Int. Cl. G03g *15/00*; **B26d** *7/00*
U.S. Cl. 355—13 **2 Claims**

Apparatus for cutting and feeding cut sheets of material from a continuous web to a remote processing station. A first set of feed rollers are arranged to advance the web at a predetermined rate under a cutting means and then into a second set of feed rollers. The second set of feed rollers, in turn, are arranged to forward the web material delivered therein at a rate slower than that of the first set of feed rollers so that a buckle is formed in the web between the cutting

means and the second set of rollers. When a desired amount of material has been advanced past the cutting means, the first feed rollers are inactivated and, simultaneous therewith,



the cutter activated to sever a sheet of material from the leading edge of the web. The severed sheet is forwarded to a subsequent processing station by the continually driven second feed rolls.

3,639,054

PHOTO REPRODUCTION APPARATUS

Joseph H. Wally, Jr., Shawnee Mission, Kans., assignor to Western Blue Print Co., Kansas City, Mo.

Filed June 25, 1969, Ser. No. 836,317

Int. Cl. G03b *27/32, 27/36*

U.S. Cl. 355—18 **25 Claims**

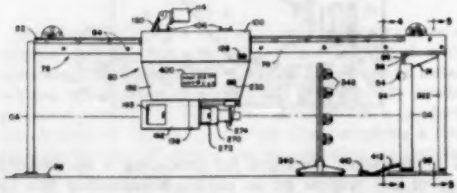


Photo reproduction apparatus having a motor-driven camera-projector optical head depended from spaced overhead rails on which it moves toward and away from a back- and front-lighted subject holder which supports one end of the rails. The optical head carries a light source on one board and an objective lens on a second board which depend from supporting parallel spaced rods along which they are movable toward and away from the condenser lenses fixed therebetween. One of the condenser lenses supports a film holder; and a rotatable shaft differentially moves both the light source and objective lens so as to permit optimum light convergence at the nodal point of the objective lens during projection and resolution and image definition at the different spatial settings of the film holder from the subject holder during both the negative exposure and the enlarging and printing operations.

3,639,055

PAPER FEED MECHANISM FOR PHOTOCOPYING MACHINE

Karl Schleifenbaum, Haiger, Germany, assignor to Meteor-Siegen Apparatebau Paul Schmeck G.m.b.H., Haiger, Germany

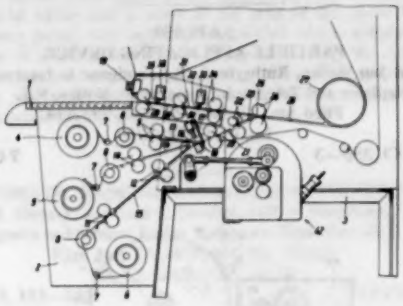
Filed May 13, 1969, Ser. No. 824,056

Claims priority, application Germany, Oct. 24, 1968, P 18 02 744.6

Int. Cl. G03b *27/48*

U.S. Cl. 355—29 **21 Claims**

A photocopying machine has copy paper supplied from a continuous roll, and printing is effected while the paper is moving. In order that the paper might be severed while stationary, a variable speed drive is provided which accelerates



the paper to form a loop therein, and then stops the paper for severing.

3,639,056

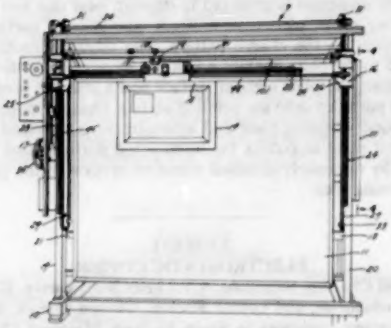
PROGRAMMED PLATE-MAKING MACHINE

Albert Gerson, Baldwin Road, Yorktown Heights, N.Y.

Filed June 17, 1970, Ser. No. 47,051

Int. Cl. G03b *27/62*

U.S. Cl. 355—40 **6 Claims**



A photo-offset plate-making machine particularly adapted for the exposure of a series of prints by successively locating a negative carrier in predetermined horizontal and vertical positions relative to a plate-supporting frame for repeated exposure. Illuminated adjustable signal means is provided to indicate the arrival of the negative carrier to said predetermined locations, the signal means being powered by extendable power cords having means for retracting the same depending upon the location of the negative carrier.

3,639,057

COPYING MACHINE FOR MAKING REDUCED-SIZE COPIES

Herbert P. Thomas, Miami; Thomas E. Hartman, Opa Lock, and Torulf F. Aasen, Hollywood, all of Fla., assignors to Copystatics Manufacturing Corporation, Miami Lakes, Fla.

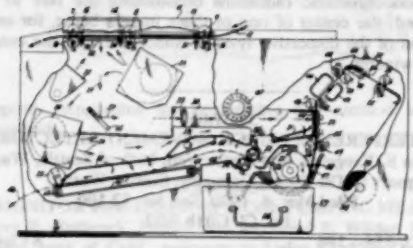
Filed Apr. 6, 1970, Ser. No. 25,794

Int. Cl. G03b *27/42*

U.S. Cl. 355—51 **16 Claims**

A copying machine for making reduced-size copies. An original document to be copied is moved by rollers past a

scanning station faster than a copy sheet is moved past an exposure station. An optical system reduces the size of the image of the original document at the exposure station. The machine is based on another machine originally designed to make full-size copies. In the latter machine, the original document and the copy sheet move at the same speed. To minimize changes in the conversion of the machine, the original transport speed is increased, but movement of the



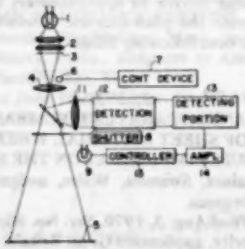
original is interrupted (while the copy sheet continues to move) at some point before the original reaches the scanning station. The machine is also capable of making multiple copies of an original; by slightly decreasing the speed of the original in the reverse direction (relative to the speed in the full-size copying machine), it is not necessary to interrupt movement of the original in the forward direction in all cycles after the first.

3,639,058

AUTOMATIC PHOTOGRAPHIC GRADATION-MEASURING SYSTEM FOR CONTROLLING AUXILIARY EXPOSURE MEANS

Tsutomu Kimura, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Ashigara-Kamigun, Kanagawa, Japan

Filed Jan. 9, 1970, Ser. No. 1,669
Claims priority, application Japan, Jan. 25, 1969, 44/5581
Int. Cl. G03b *27/78*
U.S. Cl. 355—83 **1 Claim**



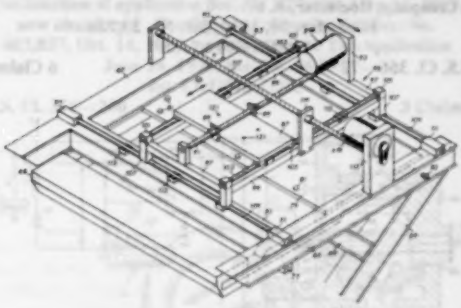
The focal plane on which the photographic negative image is focused is divided into a number of parts respectively connected to light-transmitting members. The ends of the light-transmitting members are arranged in a circle and scanned by another light-transmitting member which is connected to a light receptor. The output photocurrent from the light receptor is a measure of the photographic gradation of the negative image.

3,639,059

GRAPHIC-PROCESSING APPARATUS

Mathew A. Strumor, New Rochelle, N.Y.; Ervin J. Rachwal, Framingham; Douglas B. Campbell, Natrick, and Robert W. Marculewicz, Manchester, all of Mass., assignors to Matrographics, Inc., New York, N.Y.

Filed Feb. 10, 1969, Ser. No. 805,088
Int. Cl. G03b *27/04*
U.S. Cl. 355—86 **15 Claims**



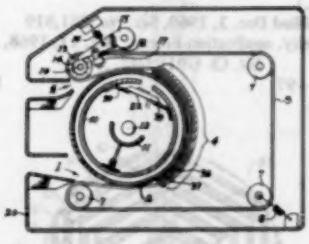
A process and apparatus for making printing plates with composite images for lithography and the like in which an imaging head is adapted to carry a series of photographic images to be registered on a printing plate. The head is mounted on apparatus for setting it to a set of positions each in registry with a different location on the plate, and includes a flash lamp for exposing the plate to the several images, whereby the need for manual imposition is eliminated.

3,639,060

APPARATUS FOR PHOTOGRAPHICALLY DUPLICATING INFORMATION-BEARING MEDIA

Jorg Jaskowsky, Ruit, Wurttember, Germany, assignor to Eastman Kodak Company, Rochester, N.J.

Filed Sept. 12, 1969, Ser. No. 857,309
Claims priority, application Germany, Sept. 28, 1968, G 67 53 683
Int. Cl. G03b *27/22*
U.S. Cl. 355—104 **9 Claims**



Apparatus is disclosed for duplicating information-bearing media onto strips or pieces of photographically sensitized materials. The apparatus includes a first cylinder made of a suitably transparent material and a belt disposed to press an information-bearing medium and a photographically sensitized material against a portion of the transparent drum. A source of radiation is disposed within the transparent drum and a mechanism such as a cylinder with a slit therein is provided for directing a slit of light onto the information-bearing medium and the piece of photosensitized material after they

have been brought to a stop at an exposing station. The exposure is then made and the information-bearing medium and the exposed sensitized material are advanced from the exposure station to allow a second exposure to be made.

3,639,061

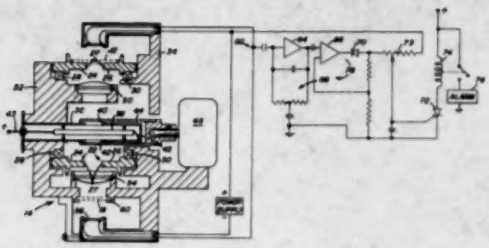
DEVICE FOR DETERMING THAT AN UNEXPOSED FILM IS DEVELOPED BY THE PROPER PROCESS

Robert J. O'Brien; Norman B. Woodall, and Donald H. Anderson, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 30, 1970, Ser. No. 23,736

Int. Cl. G01n *21/30*

U.S. Cl. 356—72 **6 Claims**



A device is disclosed which alarms against the inadvertent processing of one film-type by processing solutions compatible with another type of film. A common radiation source, to which the film to be processed is photographically insensitive, shines through both a reference filmstrip and film to be processed, thereby to produce respective signals for comparison purposes. The film to be processed passes over a circumferentially slotted pulley disposed at the entrance to the processing equipment, the radiation source being within the periphery of the pulley; and the off-axis location of the radiation source within the periphery of such pulley permits compactness for the device.

3,639,062

SPECTROMETRIC INSTRUMENT WITH TRANSPOSITION OF RAY PATHS

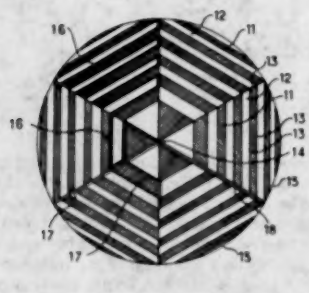
Andre J. Girard, Chatillon sur Bagneux, and Jean Botineau, Paris, both of France, assignors to Office Nationale d'Etudes et de Recherches Aerospatiales (parabreviation O.N.E.R.A.)

Filed Dec. 3, 1969, Ser. No. 881,819

Claims priority, application France, Dec. 11, 1968, 177,594

Int. Cl. G01j *3/42, 3/12*

U.S. Cl. 356—97 **10 Claims**



Spectrometer for the analysis of a polychromatic radiation flux which comprises, in a plane, a single radiation-conveying window having two multiplicities of alternating zones with different conveying characters for the radiation flux to be analyzed and such that the pattern of the zone boundaries has an axis of symmetry in that plane and a center of symmetry, the spectrometer also comprising an image-forming apparatus made up of a dispersive system having a spectrum-scanning movement and a collimating system, a receiver for the radiation flux, and means to modulate the radiation flux.

The pattern of the zone boundaries and the image-forming apparatus are such that this apparatus casts, in the plane of the single window, a plurality of monochromatic enantiomorphous images of the window provided respectively by the monochromatic radiations constituting the flux to be analyzed, the center of one of these images being, for each position of the dispersive system, coincident with the center of the window.

3,639,063

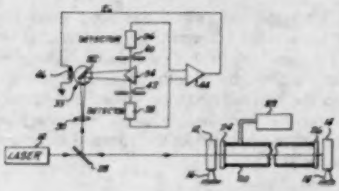
INTERFERENCE FRINGE MOVEMENT DETECTOR

Reuben S. Krogstad, and Victor Vali, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Mar. 6, 1970, Ser. No. 17,100

Int. Cl. G01b *9/02*

U.S. Cl. 356—106 **8 Claims**



An improved fringe movement detector in which a radiation interference pattern is deflected by a galvanometer mirror to illuminate two photoelectric cells with selected portions of the interference pattern. As the interference pattern shifts, the change in output of the photoelectric detectors is differentially amplified and applied to the galvanometer coil to deflect the interference pattern back to the original or reference position on the photoelectric detectors. The magnitude of the electrical signal required to return the galvanometer mirror to the reference position is proportional to the amount of shift of the interference pattern. After a shift of a predetermined amount, reset means are used to return the galvanometer mirror to approximately its original position to illuminate the photoelectric detectors with selected portions of the next following fringe.

3,639,064

METHOD AND APPARATUS FOR MEASURING THE FLATNESS OF SHEET MATERIAL WHEREIN A SCALE IS SUPERIMPOSED UPON THE SHEET

Derrick J. Haines, Swansea, Wales, assignor to University College of Swansea

Filed Aug. 3, 1970, Ser. No. 60,414

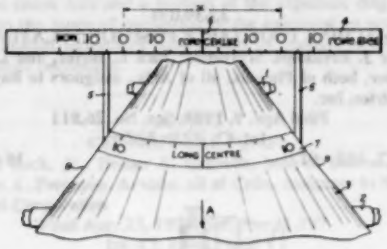
Claims priority, application Great Britain, Aug. 5, 1969, 39,045/69

Int. Cl. G01b *11/24, 11/30*; G01n *21/18*

U.S. Cl. 356—120 **8 Claims**

A method of measuring the flatness of rigid, moving sheet material, for example sheet metal as it is produced in a rolling mill, comprising supporting the sheet on two substantially horizontal supports spaced apart in the direction of movement of the sheet material, arranging above or below the moving sheet material a scale graduated to indicate the degree of flatness of the sheet material, preferably in terms of mon numbers and producing an image of the scale gradua-

tions by reflection in the upwardly facing or downwardly facing surface of the sheet material in a region between said



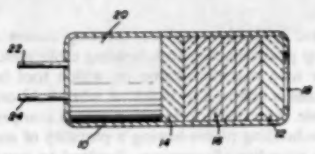
supports. Apparatus for performing the method is also described.

3,639,065

MONITOR FOR LASER OPTICAL PUMPING MEANS

Larry R. Rothrock, Poway, and Raymond E. Wilder, Escondido, both of Calif., assignors to Union Carbide Corporation, New York, N.Y.

Filed June 27, 1969, Ser. No. 837,079
Int. Cl. G01j 1/42
U.S. Cl. 356—225 **6 Claims**



A device for monitoring the output of optical pumping means of laser devices in the light frequency regions useful in pumping the laser material which comprises a sample of laser material between two light filters. The first filter passes all frequencies except the laser material fluorescent frequency while the second filter passes only the laser fluorescent frequency. The intensity of fluorescent light passing through the second filter is detected and provides a measure of the useful output of the pumping means.

3,639,066

METHOD OF TESTING OPTICAL MATERIALS FOR MICROINHOMOGENEITIES

Joseph W. Kantorski, Southbridge, Mass., and Charles Gilbert Young, Storrs, Conn., assignors to American Optical Corporation, Southbridge, Mass.

Filed June 18, 1970, Ser. No. 47,197
Int. Cl. G01n 21/16, 21/32
U.S. Cl. 356—237 **10 Claims**

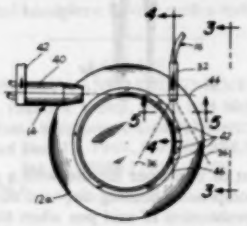
Solid optical materials such as glass which are to be used in laser systems may fail catastrophically due to the presence of microinhomogeneities. These microinhomogeneities are locatable by exposing the material to a laser pulse which preferably has a pulse duration of approximately 0.1 to 10 microseconds.

3,639,067

GLASSWARE INSPECTION APPARATUS EMPLOYING FIBER-OPTIC GUIDES

Edward J. Stephens, Manchester, Conn., assignor to Emhart Corporation, Bloomfield, Conn.

Continuation of application Ser. No. 827,106, May 15, 1969, now abandoned, Continuation of application Ser. No. 403,837, Oct. 14, 1964, now abandoned. This application June 29, 1970, Ser. No. 56,092
Int. Cl. G01n 21/32
U.S. Cl. 356—240 **3 Claims**



Optical glassware inspection apparatus with rotating upright ware at an inspection station and fiber-optic bundles employed for light source and/or reflected light pickup devices with light source and pickup centerlines tangential to the ware and perpendicular to each other, the pickup device having a vertically elongated scanning head.

3,639,068

MECHANICAL PENCIL HAVING MEANS TO PREVENT BREAKAGE OF SMALL DIAMETER LEADS

John C. Lockwood, Atlanta, Ga., assignor to Scripto Inc., Atlanta, Ga.

Filed July 16, 1970, Ser. No. 55,308
Int. Cl. B43k 21/02, 21/08
U.S. Cl. 401—58 **4 Claims**

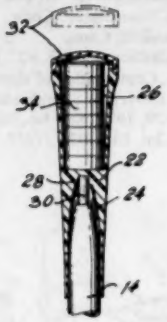
The present disclosure is directed to a mechanical pencil having an internally threaded barrel, a slotted tube for containing a writing lead, means to cause relative rotation between the tube and the barrel, a lead propelling means, a clutch member for normally maintaining the writing lead in engagement with the propelling means, and means to prevent breakage of small diameter leads.

3,639,069

COMBINED PEN OR PENCIL AND COMPARTMENT

Ralph S. Gordon, 24 W. 57th St., New York, N.Y.

Filed Jan. 19, 1970, Ser. No. 3,885
Int. Cl. B43k *29/00*
U.S. Cl. 401—195 10 Claims



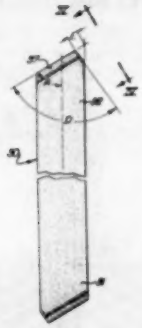
An attachment or container for use with a pen or pencil. The container comprises a housing disposed atop the pen and it actuates the pushbutton of said pen when the container is depressed. The container is also provided with a secret compartment for holding pills, coins, tokens, a perfume bottle, or the like.

3,639,070

MARKING-PEN-TYPE WRITING INSTRUMENT

Henry Davidson, Huntington Beach, Calif., assignor to The Gillette Company, Santa Monica, Calif.

Continuation-in-part of application Ser. No. 846,375, July 31, 1969, now abandoned. This application Jan. 13, 1971, Ser. No. 106,197
Int. Cl. B43k *8/00*
U.S. Cl. 401—199 4 Claims



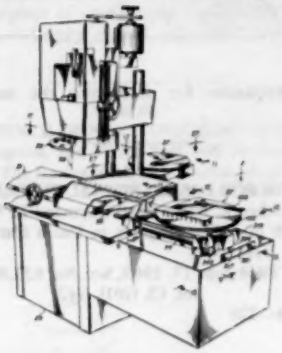
A writing and marking tip comprising a bundle of synthetic fibers disposed in generally longitudinally aligned relation, such fibers being bonded to each other at zones of contact by an adhesive, the tip being preformed to a predetermined cross section and being provided with longitudinally extending sidewalls and a planar end face lying in a plane inclined to the tip axis at an angle of from approximately 60° and comprising the marking face, such marking face having chamfered or beveled edge portions connecting the sidewalls and face for promoting the uniform ink laydown or trace during writing or marking.

3,639,071

MACHINE TOOL TABLE POSITION LOCATING

Walter J. Breitkopf, Scottsdale; Jack L. Bayer, and Leon F. Bayer, both of Phoenix, all of Ariz., assignors to Bayer Industries, Inc.

Filed Apr. 9, 1970, Ser. No. 26,811
Int. Cl. B23b *39/06*
U.S. Cl. 408—91 15 Claims



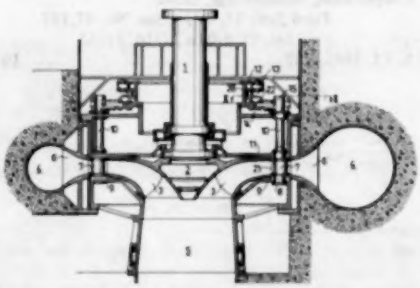
A machine tool table position locating means adapted to provide stop positions for work-holding table which is movable relative to a machine frame on which tool holding and driving means is adapted to machine work held on the work-holding table. The position locating means comprising a plurality of pin-holding plates having a plurality of stations each including a plurality of openings disposed to carry pins, the pins being placeable in a receiver on a movable position locating carriage so as accumulatively to dispose variously dimensioned pins in the receiver to be engaged between an engaging member coupled to the work-holding table and a stop means supported on the table carriage of the machine.

3,639,072

DEVICE FOR LIMITING THE MOVEMENTS OF THE WICKET GATES IN A WATER TURBINE

Nils Eric Munkstrand, Trollhattan, Sweden, assignor to Aktiebolaget Nohab, Trollhattan, Sweden

Filed Jan. 13, 1970, Ser. No. 2,204
Claims priority, application Sweden, Jan. 15, 1969, 497/69
Int. Cl. F01d *25/16*
U.S. Cl. 415—9 6 Claims



The turbine wicket gate regulator ring is connected to a crank secured to each wicket gate stem and comprising an inner portion securely connected with the crank hub and an

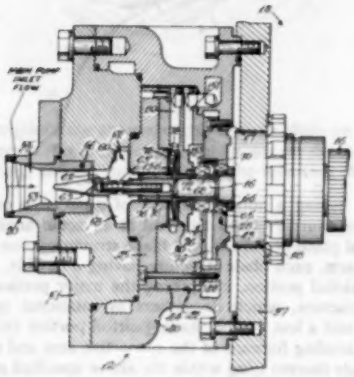
outer portion which is connected with the inner portion by means of a shear pin. A crank extension extends from the inner crank arm portion with a length which is such that the adjacent crank hub and a portion of the regulator ring projects into the range of oscillation of the extension to act as a barrier against movement thereof and by contact to restrict the angle of oscillation.

3,639,073

CENTRIFUGAL PUMP

Richard Beck, Jr.; Homer E. Gravelle, both of Denver, and James A. Ferguson, Arvada, all of Colo., assignors to Sundstrand Corporation

Filed Apr. 23, 1970, Ser. No. 31,197
Int. Cl. F04d *29/08*
U.S. Cl. 415—109 **12 Claims**



A two-stage centrifugal pump assembly adapted to produce high pressures from the second stage with a plurality of centrifugal sealing impellers associated with the second stage for the purpose of reducing the pressure drop across a mechanical seal associated with the second stage to minimize the second-stage sealing loss, there being provided a bypass from the low-pressure side of the first stage impeller to the sealing impellers of the second stage for delivering pumped fluid to the second-stage sealing impellers in a manner to prevent heating and boiling in the second-stage sealing impellers, there being also provided an alternate provision for supplying a noncorrosive compatible buffer fluid as the sealing fluid to the inlet of the sealing impellers in the second stage which also maintains the sealing impellers cool and at the same time isolates the impellers and the main impeller shaft from the corrosive fluid being pumped.

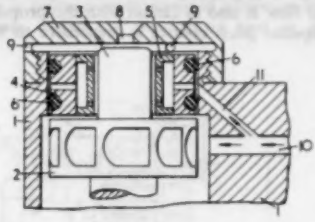
3,639,074

TURBINES

Herbert Percy Killick, Poulton-le-Fylde, England, assignor to C.M.W. Laboratories Limited, Blackpool, England

Filed May 18, 1970, Ser. No. 38,048
Claims priority, application Great Britain, May 23, 1969, 26,510/69
Int. Cl. F03b *13/04*; **A61c** *1/10*; **F16c** *7/04*
U.S. Cl. 415—110 **3 Claims**

This invention provides a small high speed gas driven turbine of the gas-bearing type having a vent in the top plate of the casing surrounding the bearing to vent the upper bearing of the turbine, wherein the upper bearing chamber is additionally vented by one or more auxiliary vents in the casing and extending generally at right angles to the longitudinal axis of the rotor, the auxiliary vents suitably being spaced equidistantly around the circumference of the casing and



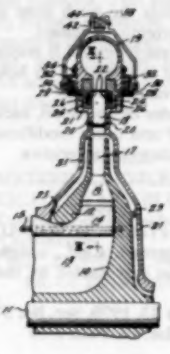
from 0.005 to 0.05 inches in diameter. The invention also provides a dental handpiece having such a turbine.

3,639,075

TURBOMACHINERY VANE ADJUSTMENT MECHANISM

John R. Erwin, Paradise Valley, Ariz., and Nicholas G. Vitale, Arlington, Mass., assignors to General Electric Company

Filed Dec. 12, 1969, Ser. No. 884,559
Int. Cl. F04d *27/00*, *15/00*
U.S. Cl. 415—163 **4 Claims**



A radial flow compressor is shown with unique adjusting means for the diffuser vanes. The leading end portion of each blade is pivoted on the casing. Pintles project from the blades into eccentrics which are journaled in shafts mounted on the casing. The shafts are rotated, to get a highly accurate angular position of the vanes through the offset relation of the axes of the shafts, the eccentrics and the pintles.

3,639,076

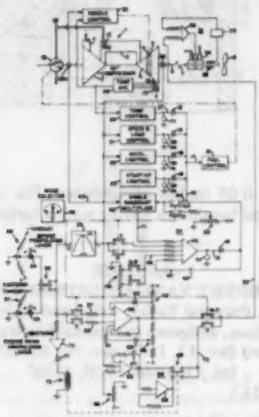
CONSTANT POWER CONTROL SYSTEM FOR GAS TURBINE

William I. Rowen, Schenectady, N.Y., assignor to General Electric Company

Filed May 28, 1970, Ser. No. 41,512
Int. Cl. B63h *3/10*; **F02c** *9/08*
U.S. Cl. 416—30 **10 Claims**

A gas turbine control system has a plurality of closed loop controls each responsive to a different operating condition and an additional loop control which sets the fuel control signal in accordance with a desired power setting. A gating device allows only one of the fuel control signals generated by each loop control to control the fuel flow servo means, that signal being the one calling for the smallest fuel flow. A

cubic function generator is positioned in circuit with the propulsion lever and modifies the desired power signal to produce a ship speed which is linear with respect to the propulsion lever position. A feedback signal indicative of actual fuel flow is also in circuit with the propulsion lever. A first propeller pitch control is responsive to the propulsion



lever position and brings the pitch from zero to full as the power setting is concurrently increased.

A second propeller pitch control is responsive to an actual shaft speed signal and is operative to hold the shaft speed relatively constant by varying pitch.

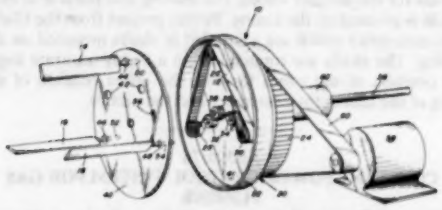
There are three modes of operation, each having a certain minimum power level and other modifications so as to improve vessel-maneuvering characteristics.

3,639,077

BELT-DRIVEN PI-PITCH CYCLOIDAL PROPELLER

Elmer F. Slates, Ridgecrast, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed July 23, 1970, Ser. No. 57,739
Int. Cl. B63h *1/10*
U.S. Cl. 416—111 **6 Claims**



A cycloidal propelling device for use on submersibles which operates in a flooded sea water environment and thereby eliminates the need for a protective sealing housing containing oil. While the propeller blades of the device are being driven in an orbital path, if a change in blade pitch is desired, a control shaft is rotated. Rotation of the blade pitch control shaft rotates a central pinion gear which drives a timing belt. Movement of the timing belt simultaneously and in synchronization rotates propeller blade gears and changes the pitch of the propeller blades which are mounted thereon with water-lubricated plastic bearings. Plug-in, pullout type plastic breakway propeller blades are used for easy repair and replacement.

3,639,078

FLEXIBLE-BLADED FAN WITH EXTENDED BLADE STRUCTURE

Shrinivas V. Pratinidhi, Chatham, Ontario, Canada

Continuation-in-part of application Ser. No. 18,855, Mar. 12, 1970, now abandoned. This application Nov. 4, 1970, Ser. No. 86,750
Int. Cl. F04d *29/38*
U.S. Cl. 416—132 **12 Claims**

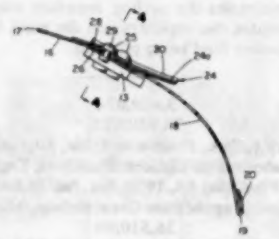
A fan having a hub, a plurality of arms each extending radially outwardly of the hub and at an acute angle to the rotational plane of the fan, and blade structures, one secured to each arm, each blade structure having a flexible, resilient trailing airfoil portion, comprising the major portion of the blade structure, which decambers as rotational speed increases, and a less flexible leading airfoil portion comprising a slat extending forward of the respective arm and disposed at an angle thereto lying within the above specified acute angle, with the trailing and leading portions mutually constructed to have the leading and trailing edges of the blade define therebetween a chord disposed at a predetermined chord angle to the rotational plane of the fan.

3,639,079

FLEXIBLE-BLADED FAN WITH IMPROVED REINFORCING CAP

Shrinivas V. Pratinidhi, Chatham, Ontario, Canada, assignor to Fram Corporation, East Providence, R.I.

Filed Mar. 12, 1970, Ser. No. 18,856
Int. Cl. F04d *29/36*
U.S. Cl. 416—132 **6 Claims**



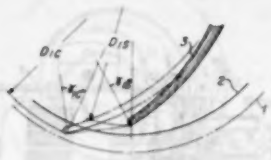
A fan having a hub, a plurality of arms extending radially outwardly of the hub, blade structures, one secured to each arm, each comprising resilient trailing portions which decamber as rotational speed increases, and a reinforcing cap secured to each arm and blade which has a decamber-limiting portion extending partially coextensively with the trailing

blade portion at an acute angle thereto, and two integrally formed upstanding lips, one disposed along each opposed radially spaced edge of the cap and of the decamber-limiting portion thereof which reduce metal fatigue in the cap.

3,639,080
FRANCIS-TYPE RUNNER

Masahiro Yamabe, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 26, 1970, Ser. No. 84,078
Int. Cl. F01d 5/04
U.S. Cl. 416—186 **1 Claim**



The length of the entrance edge of each blade on the side of the crown ring is made longer than that on the side of the shroud ring; and the runner satisfies the following three conditions:

$$15° \leq \theta \leq 35°$$

$$\gamma_1 C \leq \gamma_1 S$$

$$D_1 C \geq D_1 S$$

where

θ = an angle between the centerline of the runner and a line connecting the points at which the entrance edge of the blade contacts with the crown and shroud rings respectively;

$\gamma_1 C$ = an angle between the line passing through the center of the runner and a point at which the entrance edge of the blade contacts with the crown ring and the normal to the tangent at said contact point to the curved surface of the blade;

$\gamma_1 S$ = an angle between the line passing through the center of the runner and a point at which the entrance edge of the blade contacts with the shroud ring and the normal to the tangent at said contact point to the curved surface of the blade;

$D_1 C$ = an outer diameter of the blade at a point where the blade contacts with the crown ring; and

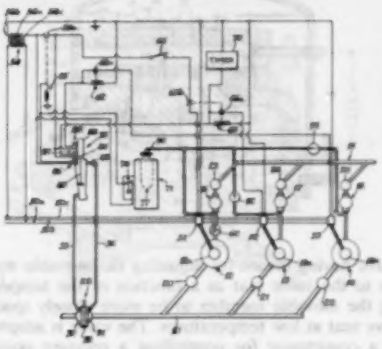
$D_1 S$ = an outer diameter of the blade at a point where the blade contacts with the shroud ring.

3,639,081
LIQUID PRESSURE BOOSTER SYSTEM WITH CUTOFF FOR MINIMUM FLOW LEVELS

John Gray, Oak Park, and Gene W. Anderson, Downers Grove, both of Ill., assignors to Liquitrol Systems, Inc., Brookfield, Ill.

Filed Jan. 2, 1969, Ser. No. 788,574
Int. Cl. F04b 41/06, 49/00
U.S. Cl. 417—7 **5 Claims**

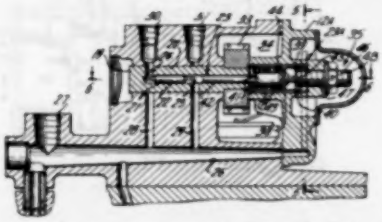
A water pressure booster system includes a plurality of constant-speed pumps which are sequenced according to system demands to maintain the pressure in a discharge conduit at a constant level for all flow rates. Pressure-regulating valves couple the output of each pump to the discharge conduit. To the output of one of the pumps is connected a reservoir of water stored in a collapsible container which is mounted in a tank pressurized with air. Control circuitry sensing both the flow rate in the input conduit and the air pressure in the pressurized tank deenergizes all pumps only when the flow is below a predetermined minimum level and the air pressure within the pressurized tank is above a predetermined level sufficient to maintain the desired discharge or system pressure. This permits all pumps to be deenergized during periods of nonuse, while maintaining the system output pressure at design level. A pump is then turned on only when the tank pressure falls below its preset minimum value. An advantageous construction for the reservoir and tank is also disclosed.



3,639,082
LIQUID METERING DEVICE HAVING AN AUTOMATICALLY VARIABLE DISCHARGE

Howard Russell Corwin, North Caldwell, N.J., assignor to Curtiss-Wright Corporation

Filed Mar. 2, 1970, Ser. No. 15,393
Int. Cl. F04b 49/00
U.S. Cl. 417—214 **4 Claims**



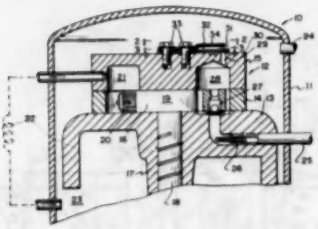
In a liquid metering device of the type having piston-cylinder assembly connected for receiving pressurized liquid and discharging slugs of the liquid alternately from opposite ends of the cylinder of the piston-cylinder assembly upon reciprocative movement of the piston therein, the improvement comprising a regulating means for automatically controlling the length of travel or stroke of the piston in response to the change in angular velocity of a rotating mechanism. The regulating means includes a valve actuatable by an inertia means which senses the r.p.m. of the rotating mechanism.

3,639,083

VALVE MEANS FOR COMPRESSORS AND THE LIKE

Bert W. Romerhaus, Haubstadt, Ind., assignor to Whirlpool Corporation

Filed Apr. 6, 1970, Ser. No. 25,799
Int. Cl. F04b *49/00*
U.S. Cl. 417—282 6 Claims



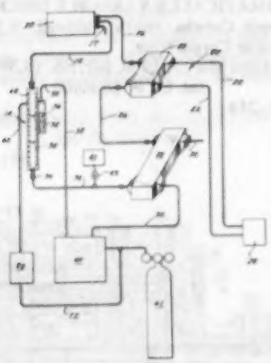
A valve having means for adjusting the movable member relative to the valve seat as a function of the temperature causing the movable member to be more closely spaced to the valve seat at low temperatures. The valve is adapted for use in a compressor for controlling a pressure equalizing passage permitting the mass flow of the compressible fluid to more easily close the passage at low-ambient temperatures whereat the density of the fluid is relatively low.

3,639,084

MECHANISM FOR CONTROL PULSATILE FLUID FLOW

Richard Paul Goldhaber, Chicago, Ill., assignor to Baxter Laboratories, Inc., Morton Groove, Ill.

Filed Apr. 6, 1970, Ser. No. 25,782
Int. Cl. F04b *43/10, 45/00;* A61b *19/00;* A61m
U.S. Cl. 417—394 6 Claims



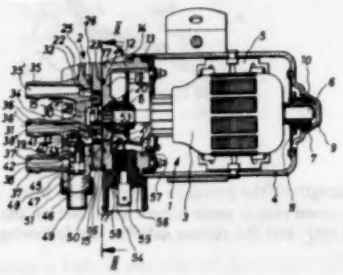
This application relates to an apparatus for imparting a pulsatile flow to fluid in a conduit, which has pumping means for providing the pulsatile flow of fluid therein. The apparatus includes an elastic tubular section defining a portion of the conduit and located downstream of the pulsatile flow providing means. The tubular section is surrounded by a sealed sleeve to define a pressurizable space about the tubular section. The space is pressurizable so that the pulsatile flow pattern of fluid passing through the tubular section is controlled in a manner responsive to the pressure within said space. If desired, a portion of the flow conduit upstream of the pumping means is of enlarged transverse dimension and sealed within a second sleeve to define a second pressurizable space to provide a means for increasing the flow of fluid into the pulsatile pumping means.

3,639,085

ELECTROMOTOR AND PUMP UNIT

Richard Bertsch, Asperg; Paul Fussner, Sindelfingen; Manfred Glaser, Neckarweihingen, and Hermann Nusser, Asperg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed May 21, 1970, Ser. No. 39,308
Claims priority, application Germany, May 28, 1969, P 19 27 073.6
Int. Cl. F04b *17/00, 35/04;* F03c *3/00*
U.S. Cl. 417—410 9 Claims



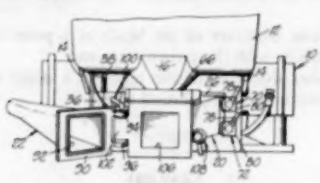
An electromotor and hydraulic pump unit with a sealed housing has a common drive shaft projecting with one end into a balancing pressure chamber in the pump stator. Pressure fluid flows along the shaft into a cavity of the housing in which the electromotor and the other shaft end are located so that the motor is cooled, the shaft bearings in the cavity lubricated by the pressure fluid, and the axial force acting on the bearings is reduced.

3,639,086

CONCRETE PUMP

Wayne Otto Robbins, Granada Hills, Calif., assignor to Tubular Structures Corporation, Los Angeles, Calif.

Filed Apr. 3, 1968, Ser. No. 727,119
Int. Cl. F04b *1/00*
U.S. Cl. 417—454 6 Claims



The invention is an improvement in joints between conduits and/or fittings. The invention is exemplified particularly as embodied in a concrete pump. The concrete pump has a pair of cylinders that discharge into a manifold, the manifold having a flapper valve in it, and a single discharge conduit. The manifold is hinged to the concrete pump so that it can be swung and locked in a position wherein its passageways are joined to the cylinders and the joint can be opened by swinging it about its hinge. Similarly, the discharge conduit is provided with a hinge hinging it to the manifold so that it can be swung into a position forming a joint with the manifold

and a continuous passageway formed from the manifold through the discharge conduit and this joint may be opened by swinging the discharge conduit away from he manifold.

3,639,087

SOLUTION PUMP WITH SUPERCHARGED SUCTION FOR ABSORPTION AIR CONDITIONER

Edwin H. Frohbieter, Stevensville, Mich., assignor to Whirlpool Corporation

Filed Oct. 29, 1969, Ser. No. 872,129
Int. Cl. F04b *23/14*
U.S. Cl. 417—572 1 Claim

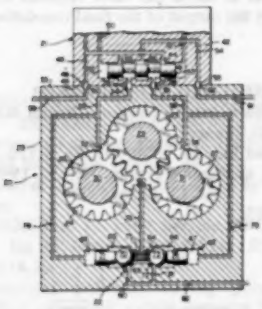
A pump for a liquid including a volatile material and particularly adaptable for an absorption refrigeration system with the pump having means for subjecting the liquid at the inlet side of the pump to a supercharged pressure tending to prevent vaporization of the volatile material of the liquid at the intake of the pump.

3,639,088

CASE PRESSURIZATION CONTROL FOR A POSITIVE DISPLACEMENT DEVICE DRIVEN HYDRAULICALLY BY A FOUR-WAY CONTROL VALVE

William C. Moog, Jr., Aurora, N.Y., assignor to Moog Inc., East Aurora, N.Y.

Filed Oct. 6, 1969, Ser. No. 864,094
Int. Cl. F01c *1/18, 21/16*
U.S. Cl. 418—74 9 Claims



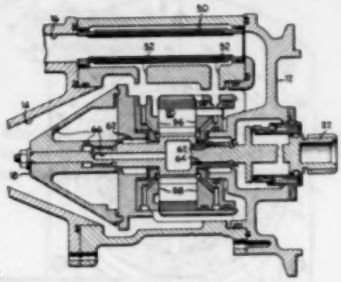
The case pressure in a chamber of a positive displacement hydraulically driven device having a pair of control ports operatively associated with a four-way control valve, is regulated always to be just below the lower pressure in the control ports by a constant amount so that backlash between the mechanically coupled movable members of the device is unidirectionally preloaded out at all times and breakout friction and internal leakage are reduced.

3,639,089

PUMP

Thomas Lock, Parma, Ohio, assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Mar. 26, 1970, Ser. No. 22,964
Int. Cl. F01c *21/06*; F03c *3/00*
U.S. Cl. 418—93 4 Claims



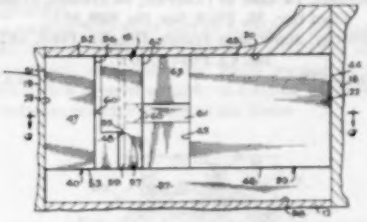
A dual-function pump assembly for pumping liquid with solid contaminants. The primary portion or section of the pump pumps liquid from an inlet to an outlet across a self-cleaning wash flow filter to a location of use. The secondary portion or section pumps clean liquid, which has passed through the filter, to lubricate and purge the running clearances and rubbing surfaces of the assembly.

3,639,090

ROTARY FLUID DEVICE WITH AXIALLY EXPANSIBLE VANE

Alma A. Hutchins, 49 North Lotus Ave., Pasadena, Calif.

Continuation of application Ser. No. 725,019, Apr. 29, 1968, now abandoned. This application Apr. 8, 1970, Ser. No. 26,764
Int. Cl. F04c *27/00*
U.S. Cl. 418—111 16 Claims



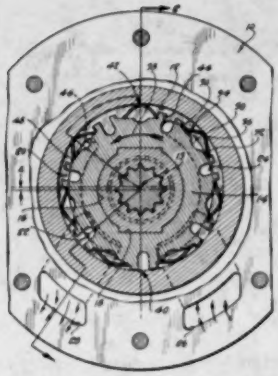
A rotary device including a rotor turning in a fluid chamber and containing slots slidably receiving vanes which project into engagement with the walls of the chamber. Each vane includes at least two sections which are relatively axially movable to assure that the assembly occupies the full axial extent of the chamber, with one section having a tongue projecting axially into and slidable within a groove formed in the other section, and with pressure fluid being conducted through a passage which extends through the interior of the latter section and into its groove to urge the sections axially apart.

3,639,091

POSITIVE DISPLACEMENT PUMP

Reginald T. Lewicki, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 27, 1970, Ser. No. 67,444
Int. Cl. F01c *5/00*; **F03c** *5/00*; **F04c** *1/00*
U.S. Cl. 418—156 **4 Claims**



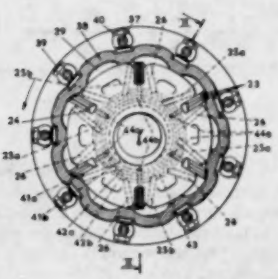
A positive displacement pump comprising a pump body having a pump bore, a rotor mounted for rotation in said bore and cooperating with that bore to define at least one pumping cavity, a plurality of slippers or pumping elements in the form of flat leaf springs carried by the periphery of the rotor, each slipper having its intermediate portion sealingly engaged with the surrounding bore wall, one end of each leaf spring being anchored on the rotor and the other being adapted for sliding movement on the rotor to compensate for changes in the working height of the spring as the spring is carried through a pumping arc.

3,639,092

APPARATUS FOR CONVERTING HYDRAULIC OR PNEUMATIC ENERGY INTO KINETIC ENERGY OR VICE VERSA, SUCH AS A ROTARY MULTICHAMBER VANE-TYPE MOTOR OR PUMPS

Gaston Sauvaget, 14 Allee de l'Oseraie, 94 Fresnes, France

Filed Dec. 30, 1969, Ser. No. 889,353
Claims priority, application France, Dec. 31, 1968, 182549
Int. Cl. F01c *1/00*
U.S. Cl. 418—175 **21 Claims**



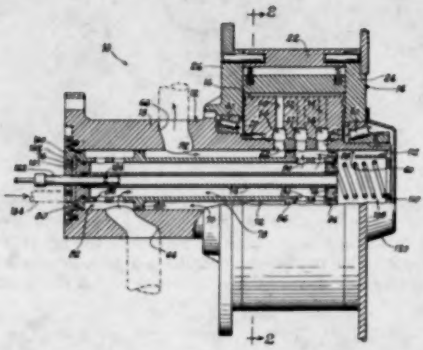
Apparatus for converting hydraulic or pneumatic energy into kinetic energy and vice versa. An inner element carrying sliding vanes is mounted in an outer element defining a plurality of recesses defining variable-volume chambers with the easier element and the vanes. The elements are relatively rotatable. Inlet and outlet conduits are provided in the inner element on each side of each vane. Means including a distributor valve put independent groups of said inlet and for outlet conduits in communication with a high-pressure fluid source or a low-pressure fluid source. Means connect the housings to a source of fluid under pressure.

3,639,093

CONTROL MECHANISM FOR FLUID TRANSLATING DEVICE

Birger F. Jansson, Racine, Wis., assignor to J. I. Case Company

Filed Apr. 13, 1970, Ser. No. 27,823
Int. Cl. F01c *1/00*; **F03c** *3/00*; **F04c** *1/00*
U.S. Cl. 418—177 **4 Claims**



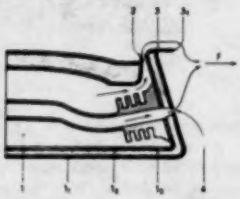
A fluid translating device having a fixed stator and a rotor cooperating to define at least one fluid chamber. The device incorporates fluid conducting means for supplying and exhausting fluid from an external source to the working chamber. The fluid conducting means is remotely controlled and is normally maintained in a first position by automatic means. The fluid conducting means is in the form of a movable valve member and the remotely controlled means includes additional fluid conducting means cooperating with the valve member to move the valve member from the first position and vary the output of the fluid translating device.

3,639,094

SPACE-HEATING BURNER

Gerard Pierre Marie-Joseph Dupont, Chemin des Postes, Sin le Noble (Nord), France

Filed Jan. 26, 1970, Ser. No. 5,716
Claims priority, application France, Jan. 30, 1969, 6901978
Int. Cl. F23m *9/00*
U.S. Cl. 431—115 **2 Claims**



The invention concerns a space-heating burner particularly for furnaces, which produces optimum mixing of the two combustion components, characterized by the fact that the

oxidant is stored under pressure in an enclosed space comprising a delivery tube lengthened on the outside by a drip-flap or lip set at a tangent to the outlet, then progressively turned back so that the jet is directed perpendicular to the outlet direction of the delivery tube, a standard type of fuel outlet nozzle being positioned close to this drip-flap in such a way that the oxidant thus injected draws up by suction the carburant forced out of the nozzle, to form a homogenous combustion mixture.

3,639,095

BURNER ASSEMBLY PRODUCING RADIANT HEAT

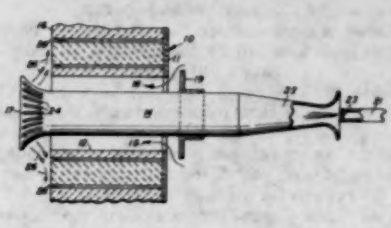
John Smith Zink, and Robert D. Reed, both of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.

Filed July 31, 1969, Ser. No. 846,405

Int. Cl. F23c *5/10*

U.S. Cl. 431—177 **2 Claims**

A burner assembly producing radiant heat by discharging the burning fuel towards the surface of a refractory structure from which the heat radiates onto objects or articles to be heated. The face of the ceramic structure is provided with



fissures into which the burning fuel enters and recycles to increase the temperature of the refractory structure from which heat radiates.

CHEMICAL

3,639,096

PROCESS OF TREATING DIRECT DYED CELLULOSIC TEXTILES WITH A MIXTURE OF AMINOPLAST CREASEPROOFING AGENTS AND PRODUCTS RESULTING THEREFROM

Ernest Linwood Wright, III, Danville, Va., assignor to Dan River Inc., Danville, Va.

Continuation-in-part of application Ser. No. 290,338, June 25, 1963, now abandoned. This application Oct. 19, 1964, Ser. No. 404,900

Int. Cl. D06p *5/00*; **D06m** *13/54*

U.S. Cl. 8—74 **12 Claims**

Cellulosic textiles dyed with a direct dye characterized by a wrinkle-resistant finish which is resistant to degradative effects of retained chlorine, the finish comprising a cured composition which in the uncured state contained N,N'-dimethylol-4,5-dihydroxyethyleneurea and a methylated melamineformaldehyde condensate, said composition being cured with an acid catalyst and heat. Processes of manufacturing such textiles are also disclosed.

3,639,097

IMINE-TERMINATED POLYMERS IMPROVE COTTON DURABLE PRESS PRODUCTS

Joseph S. Bruno, Chalmette; Robert J. Harper, Jr., Metairie, and John D. Reid, New Orleans, all of La., assignors to The United States of America as represented by the Secretary of Agriculture

Filed May 13, 1969, Ser. No. 824,252

Int. Cl. D06m *13/48*, *13/54*, *13/34*

U.S. Cl. 8—116.2 **3 Claims**

Imine-terminated polymers having polyalkylene ether moieties with a molecular weight between 500 and 10,000 have been used to improve the wet and conditioned wrinkle recovery and smooth-drying characteristics of cotton fabrics. Durable press performance can then be achieved by treatment with said polymers in combination with a less than usual amount of cross-linking agent. Such a system produces a fabric with higher conditioned and wet wrinkle recovery and better breaking strength, tearing strength, and abrasion resistance than conventional treatment. These polymers also have been used in combination with preferential cross-linking and wet fixation methods to produce fabric with improved wrinkle recovery and increased abrasion resistance.

3,639,098

STABILIZATION OF TEXTILE FIBRES

Jack Delmenico, Belmont, Victoria, and Hilbert John Katz, Highton, Victoria, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, East Melbourne, Victoria, Australia

Filed Dec. 4, 1969, Ser. No. 882,276

Claims priority, application Australia, Dec. 5, 1968, 47352/68

Int. Cl. D06m *3/02*, *3/06*, *3/10*

U.S. Cl. 8—127.5 **10 Claims**

A method of treating wool or cotton fibers to improve their resistance to, and recovery from, deformations encountered, for example, in the wrinkling of garments during wearing and in the deterioration of dimensions and shape of such articles during use or washing, which method comprises subjecting the fibers to a heat treatment while maintaining the regain within the range corresponding to the range of relative humidities encountered under normal use and for a period sufficient to allow the rearrangement of at least a proportion of the hydrogen bonds in the fibers in their minimum energy configuration.

The method may form part of a process for rendering the articles dimensionally stable to machine washing and drying, in accordance with which the fibers treated as above are reacted with a reagent capable of forming permanent cross-links between reactive groups in the fibers.

3,639,099

PREPARATION OF HIGH-SILICA FAUJASITE

Curtis Homer Elliott, Jr., Baltimore, and Carl Vance McDaniel, Laurel, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Aug. 13, 1970, Ser. No. 63,657

Int. Cl. C01b *33/28*

U.S. Cl. 23—112 **6 Claims**

Faujasite having a silica to alumina molar ratio greater than 4 is prepared by forming a reaction mixture having specified proportions of Na_2O, Al_2O_3, SiO_2 and H_2O using as reactants solutions of sodium silicate, sodium aluminate, and an aluminum salt to provide a proportion of the alumina, and crystallizing the reaction mixture in the presence of nucleation centers (zeolitic seeds). Suitable aluminum salts are aluminum sulfate, chloride, and nitrate.

3,639,100

MOLTEN SALT PRE-TREATMENT OF REACTANTS FOR TiCl, OXIDATION

Christian E. Rick, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of application Ser. No. 551,226, May 19, 1966. This application July 24, 1969, Ser. No. 844,604

Int. Cl. C01g *23/04*

U.S. Cl. 23—202 V 6 Claims

The production of metal oxide powders by the reaction of vaporous halides of titanium, zirconium, iron, aluminum, silicon and the like with oxygen is improved by preheating and conditioning at least one of the reactants by contact with molten salt prior to the reaction. The method permits carrying out the reaction in the presence of salt vapor as well as condensed particles of these salts.

3,639,101

PROCESS FOR PRODUCING SILICON OXYNITRIDE

Malcolm E. Washburn, Princeton, Mass., assignor to Norton Company, Worcester, Mass.

Filed June 29, 1970, Ser. No. 50,939

Int. Cl. C01b *21/06*

U.S. Cl. 23—203 R 5 Claims

The production of silicon oxynitride bodies from solid reaction mixes of silicon and silica is facilitated, in terms of strength of product and dimensional stability by controlling the amount of gaseous nitrogen available during reaction. The maximum reaction rate, which can be controlled by control of the partial pressure of nitrogen, can vary from 26 percent per hour for furnace loads of 10 pounds, to 3 percent per hour for loads of 10,000 pounds. Argon has been found particularly useful to control the reaction.

3,639,102

METHOD OF PREPARING FLUORINE PERCHLORATE

Vytautas Grakauskas, Arcadia, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.

Original application July 11, 1968, Ser. No. 744,621, now Patent No. 3,556,726, which is a continuation-in-part of application Ser. No. 204,663, June 19, 1962, now abandoned. Divided and this application Aug. 3, 1970, Ser. No. 60,756

Int. Cl. C01b *11/14, 11/24*

U.S. Cl. 23—203 R 5 Claims

Process of preparing fluorine perchlorate by reacting elemental fluorine with an alkali metal perchlorate in a liquid moderator and recovering fluorine perchlorate as a product of the process.

3,639,103

FLUID BED REACTORS

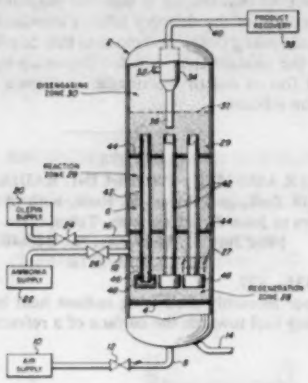
Harold R. Sheely, Newton, Mass., assignor to The Badger Company, Inc., Cambridge, Mass.

Filed Apr. 21, 1970, Ser. No. 30,456

Int. Cl. B01j *9/20, 11/04;* C07c *121/02*

U.S. Cl. 23—288 S 9 Claims

Improved fluid bed reactors characterized by downcomers for increasing the rate of catalyst turnover from the reaction zone to a catalyst regeneration zone. The invention is applicable to the production of unsaturated nitriles by the



vapor phase reaction of oxygen, ammonia, and an olefin, as well as to other catalytic vapor phase reactions.

3,639,104

PREPARATION OF MAGNESIUM ALUMINUM HYDRIDE

Eugene C. Ashby; Walter E. Foster, and Horace E. Redman, all of Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.

Filed Mar. 29, 1963, Ser. No. 269,849

Int. Cl. C01b *6/32, 6/24;* B01d *11/00*

U.S. Cl. 23—365 10 Claims

1. A method for the preparation of magnesium aluminum hydride which comprises reacting sodium aluminum hydride with an anhydrous magnesium halide in an ether as reaction solvent said ether being selected from the group consisting of unsubstituted alkyl ethers, diethylene glycol dialkyl ethers, and tetrahydrofuran mechanically separating the impure solid reaction products, separating magnesium aluminum hydride etherate from said reaction product by treatment with an ether as extractant for said etherate said ether being selected from the group consisting of unsubstituted alkyl ethers, diethylene glycol dialkyl ethers and tetrahydrofuran removing said extractant from the extract by evaporation thereof to dryness, removing the complexed ether by heating said etherate under reduced pressure to a temperature not in excess of 100° C. and recovering essentially ether-free magnesium aluminum hydride.

3,639,105

PREPARATION OF HYDROSILANES

William H. Atwell; Rudolf M. Salinger, and Richard P. Seibert, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

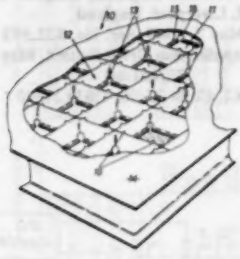
Filed Mar. 27, 1970, Ser. No. 23,443

Int. Cl. C07f *7/02;* C01b *33/04*

U.S. Cl. 23—366 10 Claims

Hydrosilanes are produced by contacting a disilane with hydrogen gas under pressure and thereafter heating the mixture in the presence of a transition metal catalyst such as palladium on charcoal. The recovered hydrosilanes are particularly useful as precursors in the production of other useful materials.

3,639,106
ACOUSTIC PANEL
Reginald W. Yate, Watford, England, assignor to Burnley Engineering Products Limited, Burnley, Lancashire, England
Filed Apr. 14, 1969, Ser. No. 815,661
Claims priority, application Great Britain, May 6, 1968, 21,441/68; May 16, 1968, 23,207/68; 23,208/68; July 17, 1968, 34,136/68
U.S. Cl. 29—191 5 Claims



A method of joining together in sandwich manner a unit comprising a first metallic sheet and a second metallic sheet with a cellular metallic core between them is effected by welding the first sheet to suitable prominences on the cell walls of the core and brazing the second sheet to the core in such a way that brazing material enters and so reinforces the corners of the cells but is not permitted to flow on to the first sheet. The unit constitutes an acoustic panel in which the first sheet is an acoustic sheet which is welded to the prominences on the cell walls of the core while the second sheet is brazed to the core with brazing material having been caused to flow into corners of the core cells to reinforce said corners and effectively secure the second sheet to the core, but without the braze material having been permitted to flow on to said acoustic sheet.

3,639,107
HOT-DIP-ALUMINIZING ALLOY
Charles B. Thompson, Pittsburgh, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed July 22, 1969, Ser. No. 843,826
Int. Cl. B23p *3/10*
U.S. Cl. 29—196.2 2 Claims

An aluminizing alloy consisting essentially of about 0.75 to 4.0 percent manganese and the balance aluminum and impurities. The alloy when applied to a ferrous article by immersion of the ferrous article in a molten bath of the alloy providing a surface coating of higher brightness and uniform smoothness. The impurities may include up to 0.20 percent silicon, up to 0.35 percent iron and up to 0.02 percent copper. A composite article having a ferrous core and a coating of the aluminum base manganese alloy. A method of producing a hot dip aluminized ferrous article having a bright finish comprising providing a molten bath of an aluminum base alloy at about 1,250° to 1,400° F. and immersing a ferrous article in the bath for about 1 to 6 minutes. The aluminum base alloy consisting essentially of 0.75 to 4.0 percent manganese and the balance aluminum and impurities.

3,639,108
GASOLINE THICKENED WITH LATEX COMPOSITION
Leo Finkelstein, Aberdeen, and John J. Blissel, Kingsville, both of Md., assignors to The United States of America as represented by the Secretary of the Army
Filed Feb. 9, 1956, Ser. No. 564,586
Int. Cl. C10l *7/02*
U.S. Cl. 44—7 E 1 Claim

1. A flame thrower fuel consisting essentially of gasoline, natural rubber latex about .05 percent to 1.5 percent by weight of a nonionic surface active agent selected from the group consisting of polyoxyethylene sorbitan trioleate, polyoxyethylene sorbitan dioleate and polyoxyethylene sorbitan monooleate, and from 15 to 40 percent by weight of the said latex of a pour point depressant selected from the group consisting of ethylene glycol, glycerine and formamide said latex having not less than 60 percent by weight of rubber solids, in such quantity that the rubber solids content of the said fuel is 3 to 17 percent by weight.

ERRATUM

For Class 44—62 see:
Patent No. 3,638,349

3,639,109
SMOKE SUPPRESSANT COMPOSITIONS FOR PETROLEUM FUELS
Elmer J. Badin, Hightstown, N.J., assignor to Cities Service Oil Company, Bartlesville, Okla.
Filed Jan. 2, 1968, Ser. No. 694,819
Int. Cl. C10l *1/18, 1/30*
U.S. Cl. 44—66 20 Claims

The invention disclosed herein is a liquid fuel composition having reduced soot and smoking characterized comprising a major proportion of a liquid hydrocarbon fuel and a minor proportion of Group IIA and Group IIB metal salts of carboxylic acids. A preferred fuel composition is from 0.1 to 0.6 percent by weight of barium- and zinc 2-ethylhexanoates admixed in diesel fuel, wherein the weight ratio of barium to zinc is about 10 to 1. Further improvement in smoke and soot reduction is obtained in hydrocarbon fuels when an ether is additionally incorporated into the salt and fuel mixture. A mixture of from about 0.1 to 0.6 percent by weight of barium 2-ethylhexanoate and zinc 2-ethylhexanoate, from between 0.2 to 0.5 percent by weight of the monomethyl ether of ethylene glycol and the balance, a diesel fuel, has substantially reduced smoke and soot forming characteristics.

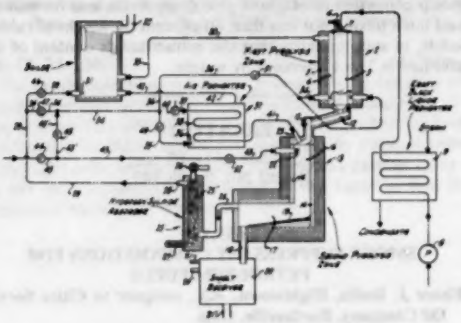
3,639,110
DETERGENT GASOLINE COMPOSITION
Arthur Lee Larsen, Denver, Colo., assignor to Marathon Oil Company, Findlay, Ohio
Filed Dec. 2, 1968, Ser. No. 780,573
Int. Cl. C10l *1/22*
U.S. Cl. 44—72 8 Claims

Improved detergent gasoline composition is obtained by incorporating within the gasoline stock from about 0.0001 to about 1.5 weight percent of the reaction product obtained by reacting an N-secondary-alkyl trimethylene diamine (e.g. can contain 10–20 carbon atoms in the alkyl group) and a phosphate ester obtained, e.g., by reacting equal molar amounts of polyphosphoric acid and a condensation product of an alcohol (can contain three to six carbon atoms) and 1–10 moles of ethylene oxide.

3,639,111
METHOD AND APPARATUS FOR PREVENTING FORMATION OF ATMOSPHERIC POLLUTANTS IN THE COMBUSTION OF ORGANIC MATERIAL
David L. Brink, and Jerome F. Thomas, both of Berkeley, Calif., assignors to The Regents of the University of California
Filed Jan. 30, 1969, Ser. No. 795,288
Int. Cl. C10j *3/10, 3/14, 3/20*
U.S. Cl. 48—111 12 Claims

Organic material, such as kraft black liquor, organic fuels, garbage and organic wastes, is destructively distilled and pyrolyzed at an elevated temperature and for a time sufficient to break down the material to noncombustible solids and to a stable gaseous clean burning fuel. The temperature is maintained to preclude recombination of intermediate

products formed during the pyrolysis and which would otherwise pollute the atmosphere. A controlled amount of oxygen is continuously introduced during the cracking to provide

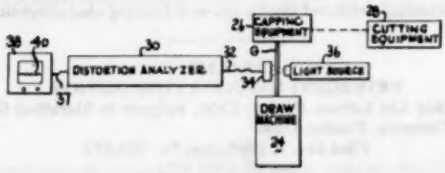


energy by exothermic oxidative reactions but the oxygen is insufficient to effect stoichiometric or in other words complete combustion.

3,639,112
METHOD AND APPARATUS FOR MAKING GLASS WINDSHIELDS

Jagadeesan V. Poola, Bridgeport, W. Va., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 16, 1970, Ser. No. 3,384
Int. Cl. C03b *33/02*; G01b *11/30*
U.S. Cl. 65—29 **4 Claims**



Windshields are made from vertically drawn glass in accordance with a method that involves scanning substantially the entire width of the glass with a distortion-analyzer apparatus that produces a trace or other record proportional to the second derivative with respect to distance traversed of the thickness of the glass, and then cutting from the glass so scanned at least one piece of windshield blank, with the windshield blank being taken from a portion of the piece wherein said derivative is at a minimal value.

3,639,113
METHOD OF MANUFACTURING TAPE POSSESSING SEMICONDUCTING PROPERTIES

Margarita Semenovna Aslanova, Karmanitsky per. 10, kv. 3, and Maria Alexandrovna Yakovleva, 3 Parkovaya ulitsa, 48, kv. 47, both of Moscow, U.S.S.R.

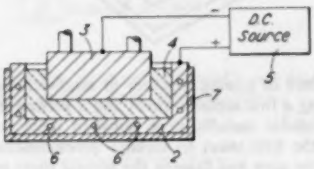
Continuation-in-part of application Ser. No. 475,252, July 27, 1965, now abandoned. This application Jan. 31, 1969, Ser. No. 795,689
Int. Cl. C03c *15/00*; C03b *29/00*; C03c *23/20*
U.S. Cl. 65—30 **5 Claims**

A method of producing a fiberglass tape with semi-conducting properties, according to which from a glass melt comprising 40 to 60 weight percent of SiO_2, 5 to 16 weight percent of Al_2O_3, 15 to 40 weight percent of CuO, 0 to 16 weight percent of CaO, 0 to 10 weight percent of MgO, 0 to 2 weight percent of NaO, and 0 to 10 weight percent of B_2O_3 glass fibers are obtained, from which a fiberglass tape is produced which is subjected to heat treatment in a reducing medium at 100 to 800°C.

3,639,114
METHOD OF RESHAPING AND ION-EXCHANGING GLASS

David G. Loukes, Prescot, England, assignor to Pilkington Brothers Limited, Liverpool, England

Filed May 7, 1969, Ser. No. 822,592
Claims priority, application Great Britain, May 14, 1968, 22,901/68
Int. Cl. C03b *23/00*; C03c *21/00*
U.S. Cl. 65—30 **4 Claims**



A molded glass article is produced by pressing a body of molten glass which is sufficiently hot to be electrically conductive between two complementary mold parts to produce an article of a required shape, and passing an electric current through the glass between solid electrically conductive electrodes in direct contact with the molded faces of the glass to impart a desired surface characteristic to at least one of the molded faces of the glass.

3,639,115
N-(CHLOROPHENOXYACETYL)ETHYLENE UREA HERBICIDES

Edwin D. Little, Convent Station, N.J., and Clarence A. Hirsch, Indianapolis, Ind., assignors to Allied Chemical Corporation, New York, N.Y.

Filed May 19, 1969, Ser. No. 825,986
Int. Cl. A01n *9/22*; C07d *49/30*
U.S. Cl. 71—92 **4 Claims**

N-(Chlorophenoxyacetyl)ethylene ureas are prepared by reacting ethylene urea with a chlorophenoxyacetyl chloride. The products are useful herbicides.

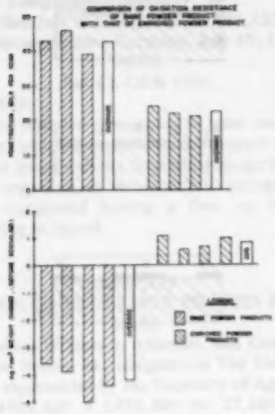
3,639,116
LANTHANUM-CONTAINING POWDERS FOR MAKING OXIDATION-RESISTANT METALLICS, METHOD OF MAKING SAME, AND METALLIC PRODUCTS MADE THEREFROM

Robert Blanchard Herman Herchenroeder, Kokomo, Ind., assignor to Cabot Corporation, Boston, Mass.

Filed Jan. 6, 1970, Ser. No. 917
Int. Cl. B22f *1/00*
U.S. Cl. 75—0.5 BB **5 Claims**

A powder blend suitable for compaction and metallurgical bonding which contains at least 10 percent chromium and preferably at least 15 percent chromium, more than 30 percent and preferably more than 38 percent of either nickel, cobalt, or any combination thereof, and a lanthanum-silicon alloy containing at least 0.4 percent silicon, the lanthanum-silicon alloy being present in sufficient quantity such that the lanthanum content of the total powder mixture is about 0.2

to 0.2 percent and preferably 0.02 to 0.1 percent (by weight).



Products made from this blend as well as the method of making same are also disclosed.

3,639,117

METHOD FOR PRODUCING BEARING GRADE ALLOY STEELS

Albert L. Lehman, Center Valley, Pa., assignor to Bethlehem Steel Corporation

Filed May 14, 1970, Ser. No. 37,297
Int. Cl. C21b *7/10, 7/06*
U.S. Cl. 75—49 **2 Claims**

This invention is an improvement in a method for producing alloy steel which may contain, for example about 1.00% carbon, about 0.45% manganese, about 0.25% silicon and 1.50% chromium. The steel has a lower incidence of non-metallic inclusions than steel produced in a conventional method, for example an air-melt electric furnace, open hearth. The steel is melted and tapped and then vacuum treated by any one of several well-known methods. The steel is deoxidized and a fluoride-containing acid slag is added to the steel. The steel and the slag are intimately mixed. The steel is then teemed into molds which can be relatively large.

3,639,118

PROCESS FOR PURIFYING MERCURY

Austin O'Grady, Sarnia, Ontario, Canada, assignor to The Dow Chemical Company, Midland, Mich.

Filed May 22, 1970, Ser. No. 39,891
Int. Cl. C22b *43/00*
U.S. Cl. 75—121 **9 Claims**

Mercury is purified with regard to iron, calcium and similar metallic impurities by contacting the mercury with "nascent" chlorine and with an aqueous phase capable of generating nascent chlorine. The contact step may be carried out, for example, by electrolyzing a chloride brine which is in contact with the mercury; or by washing the mercury with a mineral acid and the metal salt of an oxychloride acid. Impurity metal values are solubilized into the aqueous phase which is separated from the mercury. The process generally involves only two steps (i.e., contacting and separating), is easy to perform, and can be carried out within a relatively few minutes.

3,639,119

COPPER BASE ALLOY

Charles D. McLain, Alton, Ill., assignor to Olin Corporation

Continuation-in-part of application Ser. No. 648,946, June 26, 1971, now abandoned. This application May 4, 1970, Ser. No. 34,605
Int. Cl. C22c *9/00, 9/02*
U.S. Cl. 75—157 **10 Claims**

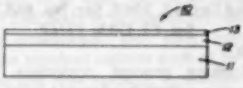
The present disclosure teaches an improved copper base alloy containing iron and tin and a material selected from the group consisting of phosphorous and zinc and mixtures thereof. The alloys of the present invention are characterized by improved physical properties, in particular high strength and high conductivity.

3,639,120

TWO-LAYERED PHOTOCONDUCTIVE ELEMENT CONTAINING A HALOGEN-DOPED STORAGE LAYER AND A SELENIUM ALLOY CONTROL LAYER

Christopher Snelling, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed June 16, 1966, Ser. No. 557,930
Int. Cl. G03g *5/04*
U.S. Cl. 96—1.5 **9 Claims**



A xerographic plate having a double layered photoconductive portion, the lower layer being designated as a storage layer and the upper layer a control layer. The storage layer consists of halogen doped selenium in a thickness from about 20 to 200 microns. The control layer consists of undoped selenium alloys in a thickness of about 0.1 to 5 microns. The plate utilizes the optimum photoconductive properties of each layer.

3,639,121

NOVEL CONDUCTING LACQUERS FOR ELECTROPHOTOGRAPHIC ELEMENTS

William C. York, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 3, 1969, Ser. No. 803,708
Int. Cl. G03g *5/00;* **C09d** *5/24*
U.S. Cl. 96—1.5 **14 Claims**

Novel electrically conducting lacquers are coated on the edge of electrophotographic elements to maintain conducting layers at ground potential during charging by providing an electrical path from the conducting layer to a grounding means. Typical conducting lacquers include mixtures of electrically conducting carbon black and graphite in a polymeric resin binder.

3,639,122
VINYL-AMINO RESIN INTERLAYER FOR ELECTROPHOTOGRAPHIC MEMBER USED IN OFFSET PRINTING

Sakae Shimizu; Fumiaki Arai, and Tuneo Kurotori, all of Tokyo, Japan, assignors to Ricoh Co. Ltd., Tokyo, Japan

Filed May 27, 1969, Ser. No. 828,375
Claims priority, application Japan, June 7, 1968, 43/39147
Int. Cl. G03g *5/00, 7/00*
U.S. Cl. 96—1.8 **1 Claim**

An electrophotograpic material for offset printing having an interlayer, which comprises a reaction product of vinyl resin and amino resin, between a support and a photoconductive layer, said vinyl resin being vinyl polymer having hydroxyl group in the terminal of the long side chain thereof and said amino resin being melamine resin, urea resin, aniline-aldehyde resin, polyacrylamide, polymethylolacrylamide or their derivatives such as methylated-ethylated- or butylated-methylolmelamine, polymethacrylamide or polymethylolmethacrylamide is disclosed.

3,639,123
DOUBLE-TRANSFER PROCESS FOR PHOTOHARDENABLE IMAGES

Russell Houston Gray, Rumson, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 13, 1969, Ser. No. 865,948
Int. Cl. G03c *11/12*
U.S. Cl. 96—28 **9 Claims**

An image-forming process comprises, in order, (1) imagewise exposing a photohardenable layer to actinic radiation to harden the layer throughout the exposed areas while leaving the underexposed areas unhardened, (2) transferring the underexposed material at a temperature between the softening point of the exposed and underexposed areas to a receptor surface, and (3) heating the exposed areas to a temperature above their softening point and transferring said areas to a second receptor surface. The invention provides both positive- and negative-working processes.

3,639,124
PRETRANSFERRED SILVER DEPOSIT RECEIVING ELEMENT

Carole L. Groncki, Lynnfield, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 17, 1969, Ser. No. 885,978
Int. Cl. G03c *5/54*
U.S. Cl. 96—29 **6 Claims**

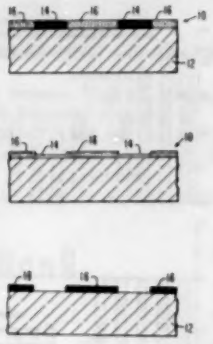
Photomechanical procedures for forming ink reproductions from an inking master obtained by silver diffusion transfer whereby continuous tone subject matter is reproduced to provide ink reproductions thereof of improved tonal quality.

3,639,125
PROCESS FOR PRODUCING PHOTOGRAPHIC RELIEF PATTERNS

Nirmal Chand, South Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 10, 1969, Ser. No. 790,334
Int. Cl. G03c *5/00*
U.S. Cl. 96—35 **9 Claims**

A process for producing photographic patterns on a substrate, such as a glass photographic mask, in which a heating step is used to selectively remove areas of a gelatin coating on a substrate. After a developed silver image is formed in the gelatin coating, a silver-removing reagent is applied to the coating to remove the silver from the exposed (image) areas of the coating. The coating is then heated at a temperature of at least 250° C. to remove the silver-free areas of the



gelatin coating from the substrate and to harden the remainder of the coating. A reversal process is also disclosed.

3,639,126
PHOTOGRAPHIC TANNING DEVELOPMENT AGENT PRECURSOR IN LIGHT-SENSITIVE ELEMENT

Johan Lodewijk Verelst, Kontich; Jozef Frans Willems, Willrijk, and Raymond Leopold Florens, Edegem, all of Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

Filed July 19, 1968, Ser. No. 745,979
Claims priority, application Great Britain, July 19, 1967, 33,260/67; 33,261/67
Int. Cl. G03c *1/06*
U.S. Cl. 96—95 **10 Claims**

Light-sensitive photographic materials are provided in the light-sensitive silver halide emulsion layer or in a separate colloid layer in water-permeable relationship with the emulsion layer, with a tanning development agent precursor constituted by an O-dihydroxybenzene derivative having at least one of its hydroxyl groups esterified to form a halogenated acyloxy group or etherified to form an α-tetrahydropyranyloxy group. Such precursor compounds are stable during storage and do not result in discoloration of the emulsion layer. On treatment with an alkaline activating liquid, a tanning photographic developing agent is released. The O-dihydroxybenzene derivatives per se are also disclosed.

3,639,127
SILVER HALIDE EMULSIONS CONTAINING A DYE DERIVED FROM 4,6-DIARYL SUBSTITUTED PICOLINIUM SALTS AS DESENSITIZER

Leslie G. S. Brooker; Daniel S. Daniel, and Robert C. Taber, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 23, 1970, Ser. No. 57,831
Int. Cl. G03c *1/36, 1/08*
U.S. Cl. 96—101 **19 Claims**

Photographic silver halide emulsions containing cyanine, styryl and merocyanine dyes derived from 4,6-diaryl substituted picolinium salts, which either sensitize or desensitize silver halide emulsions and photographic elements containing said emulsions are described. 3'-Ethyl-1,4,6-triphenyl-2-pyridothiacyanine iodide, 2-(3-nitrostyryl)-1,4,6-triphenylpyridinium iodide and 3-ethyl-5-{[1,4,6-tri(4-methoxyphenyl)-2(1H)-pyridylidene]-ethylidene} rhodanine are illustrative of the dye compounds employed.

3,639,128

FERROUS COMPLEX OF N-CONTAINING HETEROCYCLIC COMPOUND AS SILVER LATENT IMAGE STABILIZER

Reinhard Matejec; Rudolf Meyer, both of Leverkusen, and Wolfgang Himmelmann, Opladen-Luetzenkirchen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 9, 1969, Ser. No. 840,533
Claims priority, application Germany, July 19, 1968, P 17 72 903.2
Int. Cl. G03c 1/34
U.S. Cl. 96—109 2 Claims

Photographic material comprising at least one silver halide emulsion layer, which is improved with respect to the stability of the latent image and the final silver image by addition of a complex compound of iron with a nitrogen-containing heterocyclic compound having a five- or six-membered heterocyclic ring as ligand.

3,639,129

PRODUCTION OF VEGETABLE PROTEIN BEVERAGE BASE

Gus C. Mustakas; William J. Albrecht, and George N. Bookwalter, all of Peoria, Ill., assignors to The United States of America as represented by the Secretary of Agriculture

Filed Apr. 9, 1970, Ser. No. 27,184
Int. Cl. A23c 1/00
U.S. Cl. 99—64 5 Claims

A rapid continuous process which utilizes vegetable protein flour to produce a highly nutritive protein beverage base powder that can be easily converted to a liquid product by merely adding water.

ERRATA

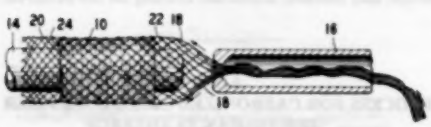
For Classes 99—23 and 99—107 see:
Patent Nos. 3,638,553 and 3,638,554

3,639,130

SHIRRED CASING STICK

Harry Paul Eichin, Western Springs, Ill., and Kenneth Moritz Jones, Bayamon, P.R., assignors to Union Carbide Corporation, New York, N.Y.

Filed Mar. 5, 1969, Ser. No. 804,452
Int. Cl. B65b 61/00
U.S. Cl. 99—175 4 Claims



A shirred casing stick having a bore is sheathed and lined within a binding adapted to maintain the integrity of the stick and the compaction of the shirred wall thereof throughout the handling and water soaking operations preceding stuffing. The binding comprises a tubular length of flexible, reticulated material extending under tension over the outside surface of the stick and through the bore, both extremities of the tubular length being secured to each other at one end of the stick.

3,639,131

PERFORMANCE AND STORAGE LIFE OF RAIN REPELLENTS

David W. Clarke, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed June 15, 1970, Ser. No. 46,458
Int. Cl. C09k 3/18
U.S. Cl. 106—2 4 Claims

An alcohol and water solution of a silicone polymer consisting of an acid neutralized cationic polysiloxane copolymer containing amino functional groups is heated in an enclosed aluminum container to form a barrier coating inside the container and to enhance the performance characteristics of the polymer in imparting visibility through a transparent surface during water impingement.

3,639,132

TITANIUM DIOXIDE CERAMIC COMPOSITION AND HOT-PRESSING METHOD FOR PRODUCING SAME

Lawson Egerton, Sarasota, Fla., and John Thomson, Jr., Spring Lake, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 13, 1970, Ser. No. 27,893
Int. Cl. C04b 33/00
U.S. Cl. 106—39 R 7 Claims

A polycrystalline ceramic body of rutile (TiO_2) has been produced which has a density of at least 4.23 grams per cubic centimeter (99.5 percent of theoretical density) and an electrical quality factor of at least 10,000 at frequencies in the gigaHertz range. The body is produced by hot pressing TiO_2 under reducing conditions, the TiO_2 containing minor amounts of certain trivalent cations such as Fe^{3+}, followed by heating in oxygen and slow cooling. Applications include use as a dielectric resonator in microwave filters.

3,639,133

PROCESS FOR MAKING SILICA-COATED LEAD CHROMATE PIGMENTS AND PRODUCT THEREOF

Howard R. Linton, Scotch Plains, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of application Ser. No. 681,323, Nov. 8, 1967, now abandoned. This application Oct. 23, 1970, Ser. No. 83,674
Int. Cl. C09c 1/20
U.S. Cl. 106—298 14 Claims

Silica-coated lead chromate pigments having improved stability in use under abrasive conditions are prepared by processes in which the lead chromate pigment particles, in a liquid slurry, are subjected to intense shear to break up agglomerates, and are thereafter coated with dense silica, optionally in combination with alumina.

3,639,134

PROCESS FOR TREATING THE SURFACE OF A STRETCHED FILM

Gerhard Stegmeier, Mainz-Weisenau; Helga Lenhart, Wiesbaden; Horst Gebler, Wiesbaden-Bierbrich, and Horst Diener, Frankfurt-Hochst, all of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed June 4, 1969, Ser. No. 830,505
Claims priority, application Germany, June 6, 1968, P 17 69 534.0; July 29, 1968, P 17 69 872.5
Int. Cl. B44d 5/04; B32b 27/32
U.S. Cl. 117—7 7 Claims

This invention relates to a process for treating the surface of a stretched film of a polyester or polypropylene or copolymers or polymer mixtures of the latter containing at least 60 percent by weight, calculated on the total polymer weight, of propylene, in order to improve the adhesion of the film surface to a heat-sealable coating, which comprises subjecting the film surface to a corona discharge in an atmosphere consisting essentially of nitrogen or carbon dioxide containing not more than about 15 percent by volume of ox-

ygen, at a film temperature in the range of room temperature to about 25° to 50° C. below the softening point of the stretched film. The invention also relates to the films so treated.

3,639,135

METHOD OF ADHERENTLY BONDING NEOPRENE TO METAL

Alvin E. Hohman, Dallas, Tex., and William L. Kennedy, Kansas City, Mo., assignors to LTV Aerospace Corporation, Dallas, Tex.

Filed June 3, 1968, Ser. No. 733,803
Int. Cl. B32b *15/06, 15/08;* B44d *1/14*
U.S. Cl. 117—10 6 Claims

Disclosed is a method of adherently bonding a neoprene (polychloroprene) composition to a metal substrate comprising the use of a primer containing a chlorinated rubber and an epoxy resin. A liquid neoprene composition is applied to the dried primer, the composition and the primer are intermixed to redissolve the primer, and the resultant coating is dried and cured.

3,639,136

DURABLE PRESS FINISH FOR WOOL/CELLULOSIC FABRICS (MELAMINE/URON RESINS)

Philip B. Roth, Bridgewater Township, Somerset County, Somerville, N.J., assignor to Koratron Company, Incorporated, San Francisco, Calif.

Filed July 29, 1968, Ser. No. 748,175
Int. Cl. B44d *1/44;* D06m *15/70*
U.S. Cl. 117—10 13 Claims

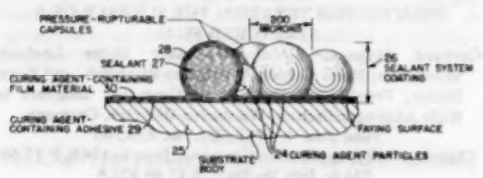
A method for imparting durable press properties to textile fabrics containing wool and cellulose, comprising impregnating the fabric with a methylated trimethylol melamine, bis(methoxymethyl)uron, a member selected from the group consisting of pentamethylol melamine and hexamethylol melamine, and a delayed action catalyst, and subsequently curing said melamines on said fabric, the composition for the method and the treated textile.

3,639,137

METAL FASTENING COATED WITH PRESSURE-ACTIVATABLE ENCAPSULATED SEALANT SYSTEM

Nicola Marinelli, Kettering, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Oct. 9, 1969, Ser. No. 865,123
Int. Cl. B32b *15/08;* F16b *19/04;* B44d *1/16*
U.S. Cl. 117—26 14 Claims



A pressure-activatable, curable sealant coating system is disclosed. The sealant coating comprises a multitude of minute capsules containing polymerizable polymeric material wherein each of the minute capsules is held to a workpiece—preferably to a fastening or to a substrate to be fastened—by means of adhesive or coating material having dispersed therein finely divided particles of curing agent material for the polymerizable polymeric material.

3,639,138

PHOSPHOR SCREEN FABRICATION

Samuel R. Shortes, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 27, 1968, Ser. No. 732,328
Int. Cl. H01j *31/10*
U.S. Cl. 117—33.5 CS 8 Claims

This specification discloses a method of applying first and second phosphor particles to a display screen wherein first phosphor particles are smaller in diameter than the second phosphor particles characterized by the steps of:

a. immersing a transparent screen in water,

b. suspending the first and second phosphor particles in the water,

c. adding a silicate to the water, and effecting a pH in the range of 7–8 to form gelatinous silicic acid and envelope the larger phosphor particles with the gelatinous silicic acid,

d. allowing time for the second phosphor particles and their gelatinous silicic acid envelope to settle onto said screen,

e. adding an acid to the water to effect a pH of 1–5 and form nongelatinous, semicrystalline, precipitating form of silicic acid which entraps the small first phosphor particles, settling the first phosphor particles onto the second phosphor particles,

f. allowing time for the precipitating silicic acid and the small phosphor particles to settle onto said second particles on the screen,

g. removing the supernatant liquid, and

h. heating said screen and said phosphor particles to drive off the water and bond the phosphor particles and the screen to effect a unitary color display screen.

3,639,139

ALUMINUM PLATING PROCESS

Roger G. Schneggenburger, Freeland, and Reinhold Hellmann, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 7, 1968, Ser. No. 765,621
Int. Cl. C23c *3/04*
U.S. Cl. 117—37 R 10 Claims

A process for depositing a metallic aluminum film on a substrate material which comprises: depositing a transition metal catalyst on said substrate; depositing an aluminum hydride compound on said substrate in contact with said catalyst; contacting said treated substrate in a heated bath consisting of an inert liquid, thereby decomposing said aluminum hydride material and providing a metallic aluminum coating on said substrate; removing said aluminum coated substrate from said bath and removing said inert liquid to provide said metallic aluminum coating on the substrate.

3,639,140

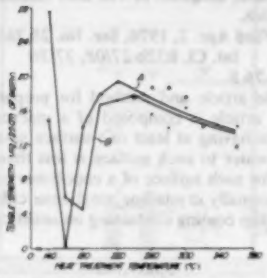
PROCESS FOR CARBONIZED CELLULOSE FIBER OR THE PRODUCTS THEREOF

Kazuo Miyamichi, Koriyama-shi, Japan, assignor to Nitto Boseki Co., Ltd., Fukushima-shi, Japan

Filed Oct. 3, 1969, Ser. No. 863,518
Claims priority, application Japan, Oct. 12, 1968, 43/74455; Sept. 5, 1969, 44/70437; 44/70438; 44/70439
Int. Cl. C01b *31/07*
U.S. Cl. 117—46 CB 6 Claims

Cellulose fiber or the product thereof is treated with a strength increasing agent selected from the group consisting of (A) ammonium sulfate, ammonium bisulfate, ammonium sulfite, ammonium bisulfite, ammonium thiosulfate, ammonium sulfamate, ammonium imidosulfonate, and mixtures thereof; (B) a mixture of at least one compound selected from the group consisting of ammonium sulfate, ammonium bisulfate, ammonium sulfite, ammonium bisulfite, ammonium

thiosulfate, ammonium sulfamate, and ammonium imidosulfonate with at least one organic nitrogen base; and (C) a mixture of an organic nitrogen base and an acid selected from



the group consisting of sulfuric acid, sulfurous acid and sulfamic acid, and heat treating the product in an inert atmosphere at a temperature of at least about 400° C. for a period of time sufficient to bring about carbonization.

3,639,141
HEPARINIZATION OF PLASTIC

Manfred F. Dyck, North Miami, Fla., assignor to Cordis Corporation, Miami, Fla.

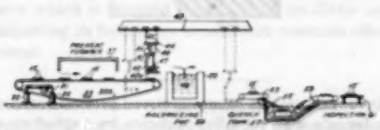
Filed Sept. 16, 1968, Ser. No. 762,376
Int. Cl. B44d *1/16*
U.S. Cl. 117—47 A **2 Claims**

Plastics are rendered nonthrombogenic by heparinizing them following a treatment with an amino alkyl tri alkoxy silane in an inert solvent. The solvent is preferably one capable of swelling the plastic. In the treatment of fluorocarbon plastics, a preliminary treatment with sodium is employed. The amino groups which become attached to the plastic are thus caused to bond heparin to the surface effectively to impart anticoagulating properties.

3,639,142
METHOD OF GALVANIZING

Herris M. Maxwell; John E. Sowers, both of Bethlehem, and John Neil Laidman, Coopersburg, all of Pa., assignors to Bethlehem Steel Corporation

Filed June 10, 1968, Ser. No. 735,740
Int. Cl. B44d *1/092*; **C23c** *1/02*
U.S. Cl. 117—51 **5 Claims**

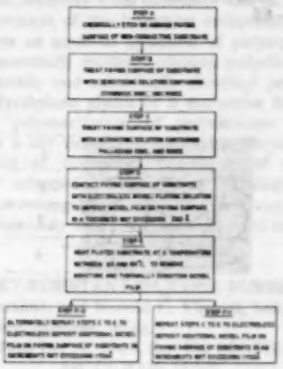


Elongated structural steel members are conveyed in a continuous operation longitudinally through a spray washer, a shot blast cabinet, an acid spray, an acid blowoff, a chloride flux spray and finally a flux blowoff to remove excess flux. The members are then passed through a preheat furnace to dry the flux and preheat the members and are then dipped into a molten zinc bath and removed therefrom supported upon C-hooks which are designed to be vibrated to remove excess molten zinc from the coated material. The structural materials are then passed to a reflow and quench device which rotates the structural members by dropping them off the end of a conveyor onto inclined skid means upon which the angles remain for a predetermined time as they slide down the skid means prior to immersion in a quench tank of water held at 160° F. to set the coating without shattering.

3,639,143
ELECTROLESS NICKEL PLATING ON NONCONDUCTIVE SUBSTRATES

Robert O. Lussow, Wappingers Falls, and Louis H. Wirtz, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 19, 1969, Ser. No. 800,597
Int. Cl. B44d *1/092*; **C23c** *3/02*
U.S. Cl. 117—54 **8 Claims**



A process for electroless deposition of uniform and consistent dense nickel films on nonconductive substrates utilizing conventional techniques. The process requires at least two repetitive cycles of activation, electroless plating of nickel and heating.

3,639,144
ORGANO-PHOSPHORUS COMPOUNDS CONTAINING PERFLUOROALKYL RADICALS AND THEIR APPLICATION TO CELLULOSIC TEXTILES

Leon H. Chance, and Jerry P. Moreau, both of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture

Filed July 18, 1969, Ser. No. 843,200
Int. Cl. B44d *1/092*
U.S. Cl. 117—56 **6 Claims**

Cotton is treated with an aqueous solution of zinc fluoroborate catalyst, and thereafter with a solution of a perfluoroalkyl aziridinyl phosphine oxide to impart oil and water repellency thereto.

3,639,145
ARTIFICIAL LEATHER AND METHOD OF PRODUCING THE SAME

Kanji Fujita, Ibaragi-shi, and Yoshiaki Sakata, Nishi-Yodogawa-ku, both of Japan, assignors to The Toyo Rubber Industry Co., Ltd., Nishi-ku, Osaka, Japan

Filed July 18, 1968, Ser. No. 745,669
Claims priority, application Japan, July 18, 1967, 42/46482
Int. Cl. B29d *27/00*; **D29b** *7/20*; **R44d** *1/44*
U.S. Cl. 117—62 **8 Claims**

A method of producing artificial leathers which comprises coating a fibrous base material with a polymeric solution containing, as the principal ingredient, a polyurethane-urea elastomer and then treating the coated fibrous base material with a nonsolvent for the polymer to coagulate the polymer.

Certain critical methods for producing the polyurethane-urea elastomer, broadly described as either a "prepolymer" process or a "one-shot" process are described in the specification.

3,639,146

PROCESS FOR THE PRODUCTION OF A MULTILAYER SHEET MATERIAL

Klaus Andra, Eschenhahn; Herbert Porrmann, Konigshofen, and Elfriede Hutschenreuter, Wiesbaden-Biebrich, all of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed July 29, 1970, Ser. No. 59,212

Claims priority, application Germany, July 31, 1969, P 19 38 990.3

Int. Cl. B44d *1/10*; D06n *3/00*

U.S. Cl. 117—68 **6 Claims**

This invention relates to a process for the production of a gas-permeable multilayer sheet material, and to the material so produced, the process comprising applying a liquid layer of a solution of a polymer in a water-miscible solvent to the surface of a moving web of fiber fleece which is free from chemical binders and allowing part of the solution to penetrate into the fleece; incorporating an aqueous dispersion of synthetic material in the fleece from the uncoated surface thereof, the dispersing phase of the dispersion acting as a coagulating agent upon part of the polymer solution contained in the fleece; causing a coagulating agent to act upon the liquid layer of polymer solution on the surface of the fleece, upon the still uncoagulated portion of the polymer solution in the fleece, and upon the dispersion of synthetic material contained in the fleece; removing any excess of coagulating agent and solvent, and drying the multilayer sheet material.

3,639,147

ARTICLE HAVING MULTILAYER COATING AND PROCESS FOR PRODUCING SAME

James William Benefiel, Livonia, and Anthony William Opipari, Sterling Heights, both of Mich., assignors to Celanese Coatings Company, New York, N.Y.

Continuation-in-part of Ser. No. 763,972, Sept. 30, 1968, abandoned.

Filed Feb. 3, 1970, Ser. No. 8,389

Int. Cl. B44d *1/14*; B32b *15/08*

U.S. Cl. 117—73 **15 Claims**

Product and process for producing a multilayer coating composition by depositing a nonaqueous, pigmented, cellulose ester containing polymeric base film on a substrate and before baking, depositing (wet-on-wet) a transparent polymeric topcoat composition on the base film and baking the resulting multilayer system.

3,639,148

POLYMER FILM SUBSTRATE WITH VINYLIDENE CHLORIDE BASE COATING AND WAX ANTISTICKING TOP COATING

Carl Moore; Dale S. Gibbs, and John W. Vanderhoff, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 2, 1970, Ser. No. 25,261

Int. Cl. B32b *27/08, 27/30*

U.S. Cl. 117—76 F **4 Claims**

A composite article and method for preparing the same wherein such article is composed of a macromolecular organic substrate having at least one surface wherein the contact angle of water to such surface is less than about 80°, a base coating for such surface of a copolymer consisting principally of a normally crystalline vinylidene chloride polymer coating and a top coating containing an antisticking agent.

3,639,149

COMPOSITE LAMINATE OF WATER-EXTENDED UNSATURATED POLYESTER

Richard Elliot Thornton Spalding, South Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Oct. 28, 1970, Ser. No. 84,918

Int. Cl. B32b *27/06*; B44d *1/14*

U.S. Cl. 117—76 F **10 Claims**

A process for producing a laminated article that is either flat or thermoformed comprising prime coating a thermoformable or thermoformed flexible thermoplastic sheet with a neat unsaturated polyester resin composition and depositing on said prime coating at least one layer of fiberglass reinforced water-extended polyester resin composition and permitting the two polyester resins to convert to the thermoset state.

3,639,150

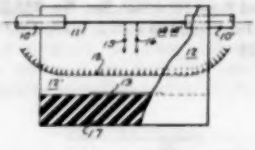
ELECTRIC EXPLOSION METAL SPRAYING FOR SUBSTRATE

Toshiro Suhara, 9-12 Komuin Jutaku, Miyuki-machi, Kashii, and Shigehisa Fukuda, 1479-3 Hakozaki, Hakata, both of Japan

Filed July 25, 1968, Ser. No. 747,675

Int. Cl. B44d *1/02*

U.S. Cl. 117—93 **2 Claims**



This invention relates to an improved process for coating a metal substrate with metallic particles by exploding a consumable metal wire in atmosphere or an inert gas of normal pressure by a heavy current.

3,639,151

VAPOR RANDOMIZATION IN VACUUM DEPOSITION OF COATINGS

Richard C. Krutenat, Middletown, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

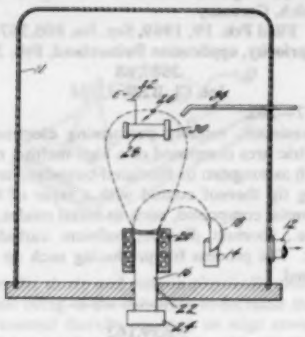
Filed Mar. 13, 1969, Ser. No. 807,636

Int. Cl. C23c *11/02*

U.S. Cl. 117—93.4 **4 Claims**

In the processes for forming protective coatings on metal substrates, particularly the nickel-base and cobalt-base superalloys, by deposition in a vacuum, an electrically biased

substrate, in conjunction with a sustained plasma discharge between the source and the substrate, is utilized to ran-



domize the coating vapor cloud and allow non-line-of-sight deposition.

3,639,152

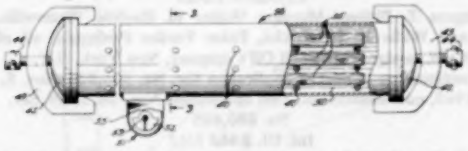
METHOD AND APPARATUS FOR FLUID IMPREGNATION UTILIZING SONIC MECHANICAL VIBRATION

Albert G. Bodine, Jr., 7877 Woodley Ave., Van Nuys, Calif.

Continuation-in-part of application Ser. No. 454,335, May 10, 1965, now abandoned. This application Mar. 28, 1966, Ser. No. 538,062

Int. Cl. B44d *1/06*

U.S. Cl. 117—113 **14 Claims**



A solid material to be impregnated with a liquid material is held in intimate contact with such liquid material. High-level sonic energy is applied to the materials to cause thorough impregnation of the solid by the liquid. This sonic energy is provided from a resonant vibration system which is vibrationally excited at a resonant frequency by means of an orbiting mass oscillator which is coupled thereto, such oscillator automatically adjusting its frequency to maintain resonant vibration of the system.

3,639,153

PROCESS OF MODIFYING A HYDROHALOGEN POLYMER SURFACE

Terry Bill Waggoner, Royal Oak, and Edgar John Seyb, Jr., Oak Park, both of Mich., assignors to M & T Chemicals Inc., New York, N.Y.

Filed Aug. 25, 1966, Ser. No. 574,954

Int. Cl. C23c *3/02*

U.S. Cl. 117—118 **2 Claims**

This invention relates to methods of modifying a hydrohalogen polymer surface which comprises contacting a hydrohalogen polymer surface with an alkali metal alkoxide MOR wherein M is an alkali metal and R is an alkyl group thereby forming an alkoxide-activated surface and contacting said alkoxide-activated surface with an oxidizing agent thereby forming an oxygen-activated alkoxide-activated surface which is capable of accepting an electroless metal deposit.

3,639,154

PROCESS FOR MANUFACTURING FIBROUS STRUCTURE HAVING EXCELLENT RECOVERY FROM EXTENSION BY TREATMENT WITH POLYORGANOSILOXANE AND A POLYETHYLENE GLYCOL OR DERIVATIVE THEREOF

Yoshio Sawa, Kobe; Takashi Itoh, Toyonaka; Minoru Kojima, Osaka, and Mikio Sotomura, Settsu, all of Japan, assignors to Kanegafucki Boseki Kabushiki Kaisha, Tokyo, Japan

Filed July 9, 1969, Ser. No. 840,499

Claims priority, application Japan, July 20, 1968, 43/51267; 43/51268; 43/51269

Int. Cl. D06m *15/66*

U.S. Cl. 117—138.8 A **17 Claims**

This invention is directed to fibrous structures such as crimped yarns and fabrics made therefrom having excellent extensibleness, recovery from extension and no water repellency. The process of the invention comprises applying to said structures an aqueous emulsion of polyorganosiloxane comprising essentially methyl hydrogen polysiloxane having specified viscosity and subsidiarily dimethyl polysiloxane if required, polyethylene glycol or a derivative thereof and a catalyst for polymerization of polysiloxane and curing preferably in a dry condition. Important fibrous structures are composed of composite fibers or of conventional mechanically crimped fibers. Crimp developing for the former or heat setting of the latter can be advantageously effected simultaneously with the aforementioned curing.

3,639,155

DIRT-RESISTANT SILICONE RUBBER

Robert C. Hartlein, and Harold L. Vincent, both of c/o Dow Corning Corp, Midland, Mich.

Filed Dec. 1, 1969, Ser. No. 881,320

Int. Cl. B32b *25/20*

U.S. Cl. 117—138.8 A **7 Claims**

A silicone rubber having a cured coating on a surface which is exposed to the atmosphere where said coating is a room-temperature vulcanizable organosiloxane block copolymer curable through an acetoxy, ketoxime or alkoxy functionality is resistant to dirt pickup. A room-temperature vulcanizable organosiloxane block copolymer curable through an acetoxy, ketoxime or alkoxy functionality is applied to a silicone rubber surface and allowed to cure to provide a dirt-resistant coating.

3,639,156

SILOXANE POLYMERS FOR SOIL-REPELLENT AND SOIL-RELEASE TEXTILE FINISHES

Allen G. Pittman, El Cerrito, and William L. Wasley, Berkeley, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture

Filed May 19, 1970, Ser. No. 38,899

Int. Cl. D06m *15/66*

U.S. Cl. 117—139.5 A **34 Claims**

Fluorocarbon silanes are copolymerized with silanes which contain two or more alkyleneoxy groups. The copolymers are useful for application to fibrous materials to provide both soil repellency and soil releasability.

3,639,157

PROCESS FOR FINISHING TEXTILE MATERIALS WITH A POLYMER OF A VINYL COMPOUND AND THE REACTION PRODUCT OF A POLYOL AND AN ORGANIC POLYISOCYANATE

Walter Wunder, Cologne-Flittard; Wolfgang Klebert, Leverkusen; Heinz Herlinger, Cologne-Flittard, and Karl Schafer, Opladen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of application Ser. No. 438,102, Mar. 8, 1965, now abandoned. This application July 18, 1968, Ser. No. 750,999

Int. Cl. C08j *1/44*; **C10m**

U.S. Cl. 117—139.5 A **10 Claims**

Textile materials which have been treated with an aqueous liquor containing a polymer of a vinyl compound and the

reaction product of excess organic polyisocyanate with a polyol. The textile materials have improved crease resistance.

3,639,158

MAGNESIUM-HYDROXIDE-CONTAINING PAPER

John Maskal; Ivan M. Thompson, and Henrik R. Heikel, all of Ludington, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 4, 1968, Ser. No. 773,350
Int. Cl. D21h *1/22*
U.S. Cl. 117—152 1 Claim

Paper possessing outstanding opacity, whiteness and gloss characteristics containing a magnesium hydroxide pigment having about one to five weight percent calcium ion concentration in solid solution therewith and methods of manufacturing such paper are provided. The pigment is contained either as a paper filler or as a component of a coating pigment composition.

3,639,159

STRUCTURAL CARBONACEOUS MATERIALS HAVING IMPROVED SURFACE EROSION CHARACTERISTICS

Emery T. Rose, and Larry V. Pezzanite, both of Lawrenceburg, Tenn., assignors to Union Carbide Corporation

Filed Oct. 31, 1967, Ser. No. 679,567
Int. Cl. F02k *1/24, 11/02;* B44d *1/09*
U.S. Cl. 117—161 8 Claims

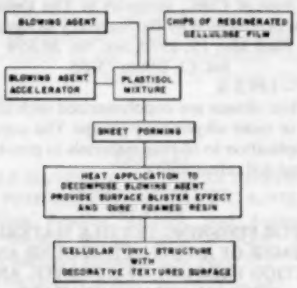
Structural carbonaceous materials, such as graphite, having improved resistance to oxidation and corrosion at elevated temperatures are obtained by impregnating a solid carbonaceous material with a high boiling point hydrocarbon resin which leaves little or no residue on volatilization, such as a polyphenyl resin.

3,639,160

METHOD OF MAKING A CELLULAR STRUCTURE HAVING A DECORATIVE TEXTURED SURFACE

Dorsey C. Nelson, Springfield, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Filed Apr. 17, 1968, Ser. No. 722,098
Int. Cl. B44d *1/09*
U.S. Cl. 117—161 C 7 Claims


BLOWING AGENT
CHIPS OF REGENERATED CELLULOSE FILM
BLOWING AGENT ACCELERATOR
PLASTISOL MIXTURE
SHEET FORMING
HEAT APPLICATION TO DECOMPOSE BLOWING AGENT PROVIDE SURFACE BLISTER EFFECT AND CURE FOAMED RESIN
CELLULAR VINYL STRUCTURE WITH DECORATIVE TEXTURED SURFACE

A method of making a cellular structure having a decorative textured or grained and leatherlike surface formed by foaming a vinyl resin plastisol containing a blowing agent and chips of regenerated cellulose film having absorbed moisture followed by curing of the foamed structure.

3,639,161

MELT-RESISTANT WELDING ELECTRODES

Hermann Trattner, Munich, and Rudolf Klar, Augsburg, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Feb. 19, 1969, Ser. No. 800,767
Claims priority, application Switzerland, Feb. 23, 1968, 2687/68
Int. Cl. B23k *35/34*
U.S. Cl. 117—202 7 Claims

A melt-resistant, reliably performing electrode for low-power electric arcs composed of a high-melting metallic substance, such as tungsten or thoriated-tungsten, having at least the welding tip thereof coated with a layer of high-melting metal-nonmetal compound, such as metal oxides, carbides or nitrides, i.e., thorium dioxide, hafnium carbide, tantalum nitride, etc. The process for producing such an electrode is also disclosed.

3,639,162

ELECTROCONDUCTIVE COATING

Harris J. Bixler, Lexington, Mass., assignor to Amicon Corporation, Cambridge, Mass.

Filed Oct. 20, 1966, Ser. No. 588,005
Int. Cl. B44d *1/18;* G03g *5/00*
U.S. Cl. 117—215 10 Claims

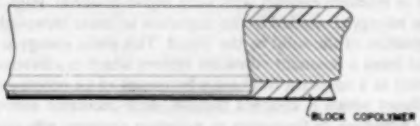
Paper having a surface coating of exfoliated three-layer clay exhibiting a surface conductivity of 10^{9}–10^{10} ohms/sq. at relative humidities from 12–15 percent may be used for making a copy sheet for electrophotography by providing an overcoating of zinc oxide. An aqueous dispersion of exfoliated three-layer clay together with water soluble electroconductive inorganic compound is described.

3,639,163

BLOCK POLYMER INSULATION FOR ELECTRIC CONDUCTORS

Eugene T. Bishop, Moraga; Walter R. Haefele, Placerville, and Willis R. Hendricks, Palos Verdes Peninsula, all of Calif., assignors to Shell Oil Company, New York, N.Y.

Continuation-in-part of application Ser. No. 506,526, Nov. 5, 1965, now abandoned. This application Nov. 26, 1969, Ser. No. 880,405
Int. Cl. B44d *1/42*
U.S. Cl. 117—217 3 Claims



An insulated electric conductor comprising an electric conductor and as insulation therefor, a hydrogenated block polymer such as polystyrene-polyisoprene-polystyrene. The electric conductor may comprise said block copolymer having dispersed therethrough a particulate conductive metal such as copper.

3,639,164

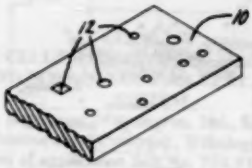
ENAMELED METAL SUBSTRATES AND METHOD OF FORMING

Roland T. Girard, Scotia, N.Y., assignor to General Electric Company

Filed Dec. 15, 1969, Ser. No. 885,206
Int. Cl. C23d *5/02*
U.S. Cl. 117—222 8 Claims

Pinhole-free enamel coatings have a dielectric breakdown above 2,500 volts are formed atop a multiperforated metallic

substrate by the addition of an inert refractory additive, e.g., silicon dioxide, magnesium oxide, calcium fluoride, etc., to the enamel slurry utilized to coat the substrate. The inert additives comprise between 10 and 35 percent by weight of the



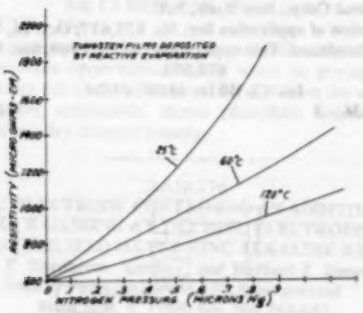
enamel frit in the slurry and remain physically unaltered during subsequent firing of the substrate to increase the viscosity of the fired enamel thereby assuring an edge coverage of at least 5 mils for enamel coatings less than 10 mils thick.

3,639,165

RESISTOR THIN FILMS FORMED BY LOW-PRESSURE DEPOSITION OF MOLYBDENUM AND TUNGSTEN

John R. Rairden, III, Niskayuna, N.Y., assignor to General Electric Company

Filed June 20, 1968, Ser. No. 738,563
Int. Cl. H01c 7/00
U.S. Cl. 117—227 12 Claims



High resistivity, low temperature coefficient of resistance films are formed by evaporating a molybdenum or tungsten source in a low-pressure atmosphere, e.g. 5×10^{-4} torr, of a nitrogen bearing gas, a carbon bearing gas or an inert gas and depositing a resistor film atop a preferably unheated dielectric substrate.

3,639,166

COATED TRANSFER MEDIUM FOR PRODUCING SCRATCH AND SMUDGE RESISTANT MARKS

Charles T. Fellows, Kettering, and Stanley R. Hermann, Xenia, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed May 6, 1970, Ser. No. 35,230
Int. Cl. B41m 5/10; C04b 35/00
U.S. Cl. 117—234 26 Claims

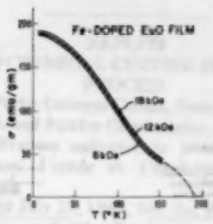
A transfer medium comprising a base having a transferable coating composition thereon. The coating composition comprises about 3 to 40 percent by weight of an olefinic polymer; about 3 to 40 percent by weight of a wax; about 15 to 70 percent by weight of a thermoplastic aminotriazine-sulfonamide-aldehyde resin; and about 1 to 45 percent by weight of a sensible material.

3,639,167

TRANSITION METAL DOPED EUO FILMS

Kie Y. Ahn, Bedford, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 13, 1969, Ser. No. 876,404
Int. Cl. H01f 10/02
U.S. Cl. 117—240 12 Claims



There is disclosed a ferromagnetic article of manufacture comprising a crystalline EuO film disposed on a substrate such as glass and quartz. The film is doped with a metal selected from Fe, Co, Ni and Cr. The doped film has an increased Curie temperature of about 180° K., its optical absorption peak occurs at about 5,800 A. and has a sharply increased absorption coefficient of about 2.4×10^5/cm. The article also has a high-magneto-optic Faraday rotation at higher temperatures.

Fabrication of the article is by the simultaneous vacuum evaporation of Eu, Eu_2O_3 and an inner transition metal.

3,639,168

DIRECT COMPRESSION VEHICLES

Anthony Monti, Irvington; John P. Troy, Hicksville, both of N.Y., and Charles B. Broeg, Short Hills, N.J., assignors to SuCrest Corporation, NY, N.Y.

Filed Apr. 29, 1969, Ser. No. 820,283
Int. Cl. C13f 3/00
U.S. Cl. 127—29 10 Claims

Direct compression vehicle useful for preparation of tablets by the direct compression technique is obtained by dispersing a diluent such as sugar, in a fully hydrated hydratable polymer, such as starch, drying the resulting dispersion, and reducing the dried product to particles of the desired size. The vehicle can be admixed with the active material and, if desired, a lubricant, and the resulting mixture compressed without prior granulation or slugging to form a tablet.

3,639,169

DIRECT COMPRESSION VEHICLES AND METHOD THEREFOR

Charles B. Broeg, Short Hills, N.J.; Anthony Monti, Irvington, and John P. Troy, Hicksville, both of N.Y., assignors to SuCrest Corporation, New York, N.Y.

Filed Apr. 29, 1969, Ser. No. 820,287
Int. Cl. C13f 3/00
U.S. Cl. 127—29 11 Claims

A granular, multicomponent direct compression vehicle is made by uniformly blending at least one compactible material with other materials, compacting the blend to a sheet, breaking the sheet up into particles of a desired size and, if necessary, screening. The resulting product when blended with an active material and, to the extent necessary, a lubricant, can be directly formed into a tablet.

3,639,170

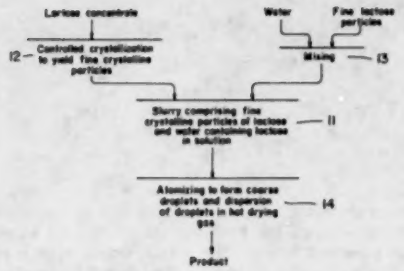
LACTOSE PRODUCT AND METHOD

Jerry T. Hutton, Glen Ellen, and Gaylord M. Palmer, Castro Valley, both of Calif., assignors to Foremost-McKesson, Inc., San Francisco, Calif.

Continuation-in-part of application Ser. No. 393,877, Sept. 2, 1964, now abandoned. This application May 1, 1970, Ser. No. 33,704

Int. Cl. C13k *5/00*

U.S. Cl. 127—31 5 Claims



A dry lactose product in the form of spherical granules each consisting of lactose crystals bonded together by lactose in glass form. It has excellent free-flowing properties with relatively high solution rate and good physical stability. Also a method of making the product in which an aqueous slurry of fine lactose crystals is spray dried.

3,639,171

METHOD OF ISOLATING D-XYLOSE FROM HARDWOOD SULPHITE LIQUOR

George J. Paabo, and Ants-Michael Uesson, both of Malmo, Sweden, assignors to Sydkemi Aktiebolag, Malmo, Sweden

Filed May 2, 1969, Ser. No. 821,480

Claims priority, application Sweden, Dec. 5, 1968, 16624/68

Int. Cl. C13k *9/00, 1/02*; D21c *3/20*

U.S. Cl. 127—37 2 Claims

d-Xylose is isolated from hardwood sulphite liquor by means of azeotropic isopropyl alcohol.

3,639,172

CLEANING OIL-LADEN METAL WASTE TO RECOVER THE METAL AND RECLAIM THE OIL

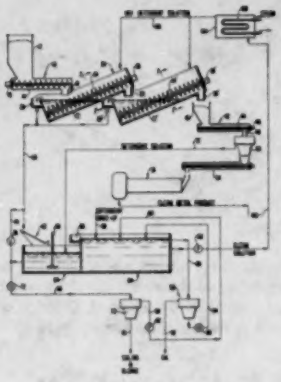
James R. Keogh, Jr., Philadelphia, Pa., assignor to FMC Corporation

Continuation-in-part of application Ser. No. 693,298, Dec. 26, 1967, now Patent No. 3,544,369, dated Dec. 1, 1970. This application July 8, 1970, Ser. No. 53,261

Int. Cl. B08b *7/04*

U.S. Cl. 134—25 5 Claims

Oil-laden metal waste such as turnings, chips and the like are cleaned to remove oil and other impurities from the metal waste enabling recovery of the metal and reclaiming of the oil. The cleaning is achieved through counterflow of a detergent solution in a wash bath, removing the cleaned metal waste from the bath and separating a substantial quantity of the remaining moisture therefrom, and removing the detergent solution from the wash bath and running it through a rehabilitation circuit where it is subjected to centrifugal force to separate sludge and oil from the solution. Then concentrated makeup detergent solution is added, the makeup and



restored detergent solution heated and returned from the rehabilitation circuit to the wash bath.

3,639,173

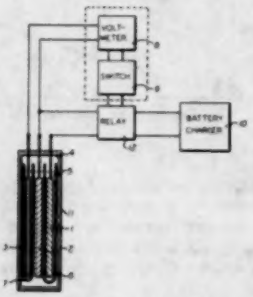
METHOD OF CONTROLLING ZINC DENDRITE GROWTH

Zbigniew Stachurski, Brooklyn, N.Y., assignor to Yardney International Corp., New York, N.Y.

Continuation of application Ser. No. 675,617, Oct. 16, 1967, now abandoned. This application Dec. 5, 1969, Ser. No. 878,971

Int. Cl. H01m *43/00, 45/04*

U.S. Cl. 136—3 9 Claims



The growth of zinc dendrites during charge of a silver-zinc cell is a particularly undesirable feature of the zinc electrode as it eventually leads to shorting of the cell through growth of metallic trails of zinc through the separator. A method is disclosed of preventing the growth of zinc dendrites and more particularly of preventing zinc dendrite penetration of the separator. The method involves controlling the overpotential in the cell, i.e., limiting the overpotential to a value below the critical magnitude at which the zinc deposits as dendrites instead of as a moss. When zinc deposits as a moss, penetration of the separator does not occur. The new method involves so limiting the charge overpotential and using a charge rate that the cell is fully charged by the time the critical overpotential is reached. The overpotential is measured between the working zinc electrode and a built-in zinc reference electrode.

When the critical overpotential is reached, charging is terminated.

The subject matter of the invention also includes an improved electrochemical apparatus whose efficiency and useful life derive from the prevention of zinc penetration of the separator.

3,639,174

VOLTAIC CELLS WITH LITHIUM-ALUMINUM ALLOY ANODE AND NONAQUEOUS SOLVENT ELECTROLYTE SYSTEM

Matthew R. Kegelman, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of application Ser. No. 744,916, July 15, 1968, now abandoned. This application Apr. 22, 1970, Ser. No. 28,292

Int. Cl. H01m 35/02

U.S. Cl. 136—20 15 Claims

Half cells comprised of a lithium aluminum alloy anode and a lithium hexafluorophosphate-inert nonaqueous solvent electrolyte; and voltaic cells utilizing such half cells with compatible cathodes, particularly elemental sulfur and reversibly reducible iron, nickel and copper compounds having a solubility in the electrolyte solvent at 25° C. of less than 200 p.p.m. by weight, such voltaic cells being useful as primary and/or secondary batteries.

3,639,175

ADDITIVES FOR DRY CHARGED BATTERIES

Frederick L. Marsh, Minneapolis, Minn., assignor to Gould-National Batteries, Inc., Saint Paul, Minn.

Filed July 2, 1969, Ser. No. 838,693

Int. Cl. H01m 9/00; H01m 39/04

U.S. Cl. 136—154 4 Claims

A container having a zirconium affording substance that dissolves upon activation by water to precipitate the phosphates out to the electrolyte formed from the activation of a water activatable, boron phosphate sulphuric acid gel used in a dry charged battery.

3,639,176

ZINC ELECTRODE CONTAINING AN ADDITIVE TO REDUCE GASSING AT THE ZINC ELECTRODE IN A HEAT STERILIZED SILVER-ZINC ALKALINE BATTERY

George F. Nordblom, Yardley, and Herbert I. James, Levittown, both of Pa., assignors to ESB Incorporated

Filed Sept. 4, 1968, Ser. No. 758,652

Int. Cl. H01m 39/00

U.S. Cl. 136—30 7 Claims

A zinc electrode containing a mercuric sulfide additive to reduce gassing at the zinc electrode which is used as the negative electrode in a heat sterilized silver-zinc alkaline battery. The mercuric sulfide effectively reduces gassing at the zinc electrode without adversely affecting the capacity of the heat sterilized battery, whereas the conventional mercuric oxide additive reduces the capacity of the heat sterilized battery. The mercuric sulfide additive may be used in combination with a lead sulfide additive.

3,639,177

FERROUS METAL SUBSTRATE WITH DENSE, BLACK GLOSSY OXIDE COATING AND PROCESS FOR COATING PREPARATION

Craig S. Tedmon, Jr., Scotia, and Henry S. Spacil, Schenectady, both of N.Y.

Filed Mar. 27, 1969, Ser. No. 811,213

Int. Cl. C23c 17/00

U.S. Cl. 148—6.3 3 Claims

A composite structure is described in which a substrate is covered with an adherent protective/ornamental layer consisting of single phase cobalt oxide containing iron in solid solution therein. By way of example, a ferrous metal substrate to which a layer (at least about 0.5 mil thick) of cobalt has been applied is treated to provide a black, dense, coherent scale possessing a deep luster and high reflectivity. This enamellike coating is produced by (a) heat treatment of the plated substrate in an atmosphere not oxidizing to either cobalt or iron in order to interdiffuse the cobalt and iron and produce a cobalt-iron surface composition in which the iron content may range from about 2 to about 20 percent by weight and (b) oxidation of the plated substrate after it has been heated to temperatures in the range of 900° to 1,200° C.

3,639,178

THERMOCHEMICAL CUTTING OR SCARFING PROCESS

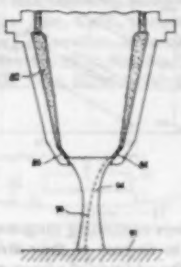
Jacques Birr, Paris; Georges Colson, Noisy-le-grand; Bernard Abel, Eptinal, and Patrice Charbonnier, Pointe Noire, (Congo), all of France, assignors to L'Air Liquide, Societe Anonyme pour l'etude et l'exploitation des procedes Georges Claude

Filed July 25, 1969, Ser. No. 844,897

Claims priority, application France, Aug. 2, 1968, 161765

Int. Cl. B23k 7/06

U.S. Cl. 148—9 C 2 Claims



Scarfing or cutting with a scarfing or cutting torch comprising a central duct of oxygen, a coaxial plurality for flame-producing ducts and, around this plurality of ducts, powder jets producing ducts. The powder jets approximately converge on the central duct axis, between the torch and the part being scarfed, at the hottest part of the flames.

3,639,179

METHOD OF MAKING LARGE GRAIN-SIZED SUPERALLOYS

Steven H. Reichman, and John W. Smythe, both of Ann Arbor, Mich., assignors to Federal-Mogul Corporation

Filed Feb. 2, 1970, Ser. No. 7,895

Int. Cl. C21d

U.S. Cl. 148—11.5 F 7 Claims

A process for making nickel-base superalloys possessing superior high-temperature properties which employs powder

metallurgical techniques and includes the steps of densifying the powdered alloy into a blank approaching 100 percent theoretical density, cold working the blank at a controlled temperature, recrystallizing the cold-worked blank for a period of time sufficient to nucleate new grains and thereafter heat treating the recrystallized blank at a controlled temperature for a period of time sufficient to attain the desired magnitude of grain growth.

3,639,180

NIOBIUM-BASE ALLOYS

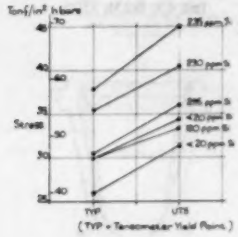
Robert William Kelcher, Sutton Coldfield, England, assignor to Imperial Metal Industries (Kynoch) Limited, Birmingham, England

Filed Dec. 9, 1969, Ser. No. 883,424

Claims priority, application Great Britain, Dec. 14, 1968, 60,428/68

Int. Cl. C21d *7/14*; C22c *27/00*

U.S. Cl. 148—12.7 **7 Claims**



Niobium-base alloys containing tungsten, hafnium and carbon are improved in respect of their strength in the range 300°–1,000° C. by the addition of silicon and by restriction of the atomic ratio of hafnium to carbon to certain critical limits. At least 100 parts per million of silicon is necessary to produce an upward trend in the ultimate strength of the alloy.

3,639,181

SINTERED COBALT-RARE EARTH BODIES AND METHOD OF PRODUCTION

Robert E. Cech, Scotia, N.Y., assignor to General Electric Company

Filed May 27, 1970, Ser. No. 41,090

Int. Cl. H01f *1/08*

U.S. Cl. 148—100 **13 Claims**

By infiltrating liquid calcium metal into a green compact of single-phase Co_5R powder of high-coercive force during the early stages of a sintering operation, the coercive force of the powder particles of the compact are preserved or increased and a new sintered product having high-coercive force and high-magnetic saturation is obtained.

3,639,182

METHOD FOR IMPROVING THE EFFECTIVENESS OF A MAGNETIC FIELD FOR MAGNETIZING PERMANENT MAGNETS

Joseph J. Becker, Schenectady, N.Y., assignor to General Electric Company

Filed Mar. 27, 1969, Ser. No. 818,465

Int. Cl. H01f *13/00*, *1/10*, *1/04*

U.S. Cl. 148—103 **10 Claims**

A method for increasing the coercive force of a permanent magnet produced by a given magnetizing field. The magnet is subjected to the magnetizing field with the initial position of the magnet being no greater than an angle θ of $\pm 45°$ formed between a predetermined direction of magnetization of the magnet and the direction of the applied magnetizing field. The magnet and/or magnetizing field are moved in at least a single plane through the angle θ which can range up to $\pm 45°$. Such movement is terminated with the magnet in a position in which its predetermined direction of magnetization is substantially parallel to the direction of the magnetizing field.

ERRATUM

For Class 149—2 see:
Patent No. 3,638,698

3,639,183

GAS GENERATOR COMPOSITIONS

Frank G. Crescenzo, and Robert L. Dow, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Apr. 16, 1965, Ser. No. 450,249

Int. Cl. C06d *5/06*

U.S. Cl. 149—18 **8 Claims**

1. A gas generator composition consisting essentially of a fuel selected from cellulose acetate, nitrocellulose and mixtures thereof;
an energetic plasticizer selected from the group consisting of trimethylolethane trinitrate, pentaerythritol trinitrate, diethylene glycol dinitrate and mixtures thereof;
a nonenergetic plasticizer selected from the group consisting of hydroxypropylglycerol, diethyl phthalate and dibutyl phthalate;
a stabilizer selected from the group consisting of N-methyl-p-nitroaniline, ethyl centralite and resorcinol; and
a ballistic modifier selected from the group consisting of dibutyl tin maleate, lead salicylate, manganese dioxide, stannic oxide, zinc carbonate, monobasic cupric salicylate, monobasic lead beta resorcylate, monobasic lead salicylate and mixtures thereof.

3,639,184

METHOD FOR PREPARING GELLED SLURRY EXPLOSIVE COMPOSITION CONTAINING DISTINCT LIUQID AND SOLID PHASES

Charles H. Grant, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of application Ser. No. 705,523, Feb. 14, 1968, now Patent No. 3,475,238. This application Aug. 19, 1969, Ser. No. 851,491

Int. Cl. C06b *19/04*, *1/100*

U.S. Cl. 149—44 **7 Claims**

A method is provided for preparing gelled slurry explosive compositions characterized as containing separate liquid and particulate phases intimately mixed together. The liquid phase containing a gelling agent is prepared and the gelling agent is cross-linked. This provides a component having extended periods of stability. Prior to the intended use of the explosive the cross-linked gum is broken down, the solid particulate constituents are dispersed in the liquid phase and the gelling agent is recross-linked.

3,639,185

NOVEL ETCHANT AND PROCESS FOR ETCHING THIN METAL FILMS

Lucas A. Colom, Bloomingburg, and Harold A. Levine, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1969, Ser. No. 837,571

Int. Cl. C23g *1/20*; C23f *1/02*

U.S. Cl. 156—13 **10 Claims**

A composition for etching thin films of metal, such as chromium or molybdenum, comprising alkaline metal salts of weak inorganic acids which yield solutions having a pH in the

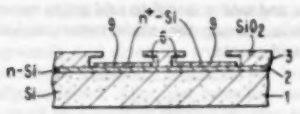
range of 12 to 13.5, e.g. sodium or potassium-meta or orthosilicates or sodium orthophosphate, and oxidizing agents active in alkaline solutions, such as potassium permanganate or sodium ferricyanide. Also, the method of selectively etching away portions of such metal films by masking said films with positive alkali-developed photoresists and treating with the etching compositions described above.

3,639,186

PROCESS FOR THE PRODUCTION OF FINELY ETCHED PATTERNS

Theodor Forster, Thalwil, Zurich, and Theodor O. Mohr, Gattikon, Zurich, both of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 24, 1969, Ser. No. 801,519
Int. Cl. H01l *7/50, 7/44*
U.S. Cl. 156—17 **6 Claims**



A method for fabricating finely etched patterns is disclosed. The steps include the etching of closely spaced windows in an oxide layer (SiO_2) which covers the surface of a semiconductor substrate. The substrate with the exposed semiconductor is then subjected to vapor etching which undercuts the oxide at the interface between the oxide and the semiconductor. The original exposed semiconductor area is enlarged as a result and the spacing between windows narrowed to dimensions not attainable using ordinary photolithographic techniques. By subsequently masking the exposed semiconductor surface with a material which does not dissolve in an etchant for the oxide and etching the oxide, the oxide can be removed forming an exposed region on the semiconductor surface which is extremely narrow. A method for fabricating a Schottky barrier field effect transistor is also disclosed.

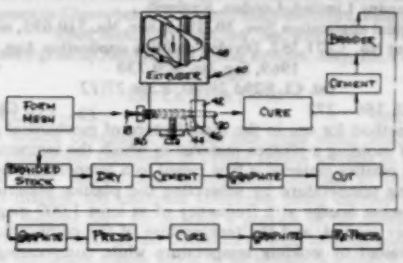
3,639,187

METHOD OF FORMING A RESILIENT AND HEAT-RESISTANT PACKING

Emil Jacob Poltorak, Somerville, N.J., assignor to Johns-Manville Corporation, New York, N.Y.

Original application Dec. 23, 1965, Ser. No. 515,891, now Patent No. 3,481,824. Divided and this application May 9, 1969, Ser. No. 843,254
Int. Cl. D04c *1/00*
U.S. Cl. 156—149 **6 Claims**

A method of forming a resilient and heat-resistant packing which comprises forming a metal mesh as a core member and extruding an elastomer composition onto core member thereby forming a jacket, vulcanizing the jacket and core member, braiding a sheath of inorganic fibrous material onto the vulcanized jacket to form a packing stock strip, coating said strip with a lubricant material and press-shaping said strip into a desired cross-sectional configuration.

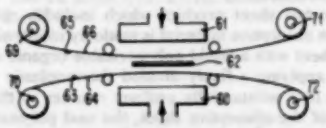


3,639,188

METHOD OF MANUFACTURE OF A MAGNETIC DISK AND RECORDING SURFACE

Marcel J. Vogel, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 21, 1970, Ser. No. 39,204
Int. Cl. B44c *3/02;* **B29d** *14/00;* **B44d** *5/04*
U.S. Cl. 156—231 **10 Claims**



A continuous method of manufacturing a magnetic disk comprising the steps of (1) coating a smooth surface of a temporary substrate, such as Mylar, with a magnetic coating; (2) overcoating the magnetic coating with an adhesive coating, the combination of the magnetic coating and the adhesive overcoating comprising a transfer coating; (3) placing at least the first surface of a disk-shaped substrate, such as an aluminum substrate, into contact with the transfer coating; (4) applying sufficient pressure between the first surface and the transfer coating to cause the transfer coating to adhere to the first surface, the adherence of the transfer coating to the first surface being greater than to the temporary substrate, and (5) removing the temporary substrate. Both sides of the disk-shaped substrate can be coated at the same time in a preferred embodiment utilizing as the adhesive either a thermoplastic or thermosetting material.

3,639,189

ADHESIVE COMPOSITIONS COMPRISING POLYETHYLENE AND OXIDIZED POLYETHYLENE

Paul F. Hartman, Wayne, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Sept. 9, 1969, Ser. No. 856,494
Int. Cl. C08f *29/12*
U.S. Cl. 156—244 **13 Claims**

Compositions of a polyethylene melt blended with from 1 to 15 percent of an oxidized linear polyethylene having a melt index of 10 to 3,500, molecular weight of from 6,500 to 20,000 and a crystalline melting point of from 125°–130°C. These blends have excellent adhesion to various substrates, particularly to metals and can be applied directly as an adhesive protective coating from the melt. The blends may additionally contain an elastomer.

3,639,190

MANUFACTURE OF SHEET MATERIAL

Thomas Andrew Brooke, Prescott, and Peter Michael Robinson, Widnes, both of England, assignors to Dunlop Rubber Company Limited, London, England

Original application Nov. 30, 1965, Ser. No. 510,695, now Patent No. 3,471,352. Divided and this application Aug. 6, 1969, Ser. No. 870,730

Int. Cl. B29d *29/00*; B29c *27/12*

U.S. Cl. 156—272 3 Claims

A method for use in the manufacture of mechanical belting, of molding a plastics material in which the temperature of the plastics material is first raised to a temperature below molding temperature by subjecting the plastics material to microwave energy at a frequency of at least 1,000 megacycles per second, and the temperature of the composition is then raised to molding temperature while compressing the belting between heated surfaces in a molding press.

3,639,191

PROCESS OF MAKING LAMINATED SHEET PRODUCTS

Erich Bader, Hanau/Main, and Hubert Koert, Grossauheim, both of Germany, assignors to Deutsche Gold-Und Silber-Scheideanstalt Vormals Roessler, Frankfurt am Main, Germany

Filed July 24, 1969, Ser. No. 844,670

Claims priority, application Germany, July 25, 1968, P 17 03 887.8

Int. Cl. B32b *31/12*

U.S. Cl. 156—284 23 Claims

A laminated sheet product which includes at least one sheet of an absorptive material is made by moistening the absorptive sheet with a liquid polymerizable organic compound and then applying a finely divided thermoplastic polymeric substance in a substantially uniform manner to the faces or one face of the absorptive sheet, the said polymer being at least swellable in said liquid polymerizable composition, then superposing the several sheets and finally subjecting the composite laminate to pressure and elevated temperatures sufficient to cause curing of the polymerizable organic composition and forming of a substantially coherent polymer coating on the sheet.

Wood types can thus be used for the laminates which could not be impregnated with polymerizable lacquers. Also, laminates can be made from or including pressed materials and a lamination is possible without the use of the conventional adhesives. Also, decorative outer sheets can be included in the lamination and profiles can easily be formed in a pressing operation. The process is also useful for improving the appearance of one single sheet of products.

3,639,192

BONDING WITH THERMOPLASTIC POLYACETAL ADHESIVES

Karlheinz Burg, Hofheim, Taunus; Harald Cherdron, Wiesbaden; Heinz Lehmann, Kriftel, Taunus, and Eleonore Lutz, Frankfurt, Main, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt, Main, Germany

Filed Feb. 25, 1969, Ser. No. 802,200

Claims priority, application Germany, Mar. 5, 1968, P 17 19 125.2

Int. Cl. C09j *3/14*

U.S. Cl. 156—327 7 Claims

Polyacetals, consisting of homo- or copolymers of formaldehyde or trioxane and having a good flowability as well as a resistance to alkali and solvents, are used as thermoplastic adhesives for textiles, paper and wood.

3,639,193

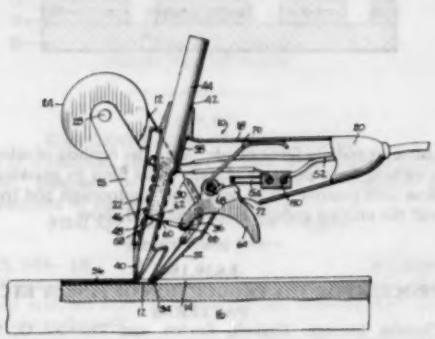
APPARATUS FOR FORMING A WIRING SYSTEM

Paul Maddison Hawkins, Stillwater, Minn., assignor to General Alarm Corporation, New York, N.Y.

Filed June 3, 1968, Ser. No. 733,854

Int. Cl. B65h *65/00*

U.S. Cl. 156—433 14 Claims



Method and apparatus for installing electrical wire or the like along a predetermined path on the surface of a base member by providing a groove in the surface of the base member along the predetermined path, simultaneously positioning in the groove guide means for laying said electrical wire and nozzle means for applying a material for maintaining the electrical wire within the groove, and then feeding electrical wire and said material to said guide means and nozzle means while moving the guide means and said nozzle means along said groove.

3,639,194

APPARATUS FOR MAKING DOUBLEFACED CORRUGATED BOARD WITH FINE PRINTING THEREON

Robert L. Plunkett, Harrington Park, and John A. Bradshaw, Hillsdale, both of N.J., assignors to Carlin Container Corporation, Inc., Hackensack, N.J.

Filed Feb. 12, 1969, Ser. No. 798,619

Int. Cl. B31f *1/28*; B32b *31/04*

U.S. Cl. 156—470 8 Claims

The upper face of the corrugated board has a preprinted face of fine printing thereon. The machine supplies individual pieces of preprinted sheet material to a travelling web of a flat-face material and adhered corrugated material. The individual pieces are supplied in a timed sequence through a photoelectric system so that the individual pieces are accurately oriented on the travelling web for subsequent severing of the completed stream into a plurality of double-faced corrugated board blanks.

3,639,195

BONDED FIBROUS MATERIALS AND METHOD FOR MAKING THEM

Arthur Joseph Sanders, Cwmbran, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Sept. 18, 1967, Ser. No. 668,642

Claims priority, application Great Britain, Sept. 20, 1966, 41,859/66

Int. Cl. B29j *1/02*

U.S. Cl. 156—62.2 6 Claims

A bonded fibrous material is made by heating a fibrous structure in which some of the fibers are special composite fibers containing a potentially adhesive component. The composite fibers comprise at least two components, at least one of which is fiber-forming and at least one of which is dispersed in the remainder of the components.

3,639,196

COLLAPSIBLE ARTIFICIAL TREE

Terry Hermanson, New York, N.Y., assignor to Mr. Christmas Incorporated, New York, N.Y.

Continuation-in-part of application Ser. No. 800,218, Feb. 18, 1969, now Patent No. 3,574,102. This application Nov. 6, 1970, Ser. No. 87,402

Int. Cl. A47g 33/06

U.S. Cl. 161—14 14 Claims

A collapsible artificial tree construction particularly adapted for Christmas decoration in which simulated branches are freely foldable substantially parallel to the simulated tree trunk in one direction and freely pivot to an unfolded laterally extending direction when the artificial tree is to be erected and used, and in which the branches freely gravitate to an unfolded condition whereby insertion of the tree trunk into a tubular container automatically folds the branches upwardly and along the trunk, and removal of the tree from a tubular container results in the branches being automatically unfolded. Also, the branches may be folded against the trunk by gravity by turning the tree upside down.

3,639,197

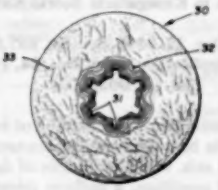
CARBON COMPOSITE STRUCTURE INCLUDING A BAND OF HELICALLY WOUND CARBON FIBERS

Raymond G. Spain, Raleigh, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 8, 1969, Ser. No. 866,116

Int. Cl. D04h 3/02

U.S. Cl. 161—35 4 Claims



A substantially all-carbon planar structure is provided which comprises essentially continues carbon fibers in a carbonaceous matrix. The fibers in the region adjacent to the periphery of the structure are ordered in a direction which substantially follows the contour of the periphery thereby providing increased strength against stresses in the region adjacent to the periphery. The fibers in the remainder of the structure may or may not be ordered.

3,639,198

GLASS ARTICLES HAVING IMPROVED BREAKAGE CHARACTERISTICS

Emile Plumat, Gilly; Francois Toussaint, Lodelinsart, and Jean Schottey, Montignies-Sur-Sambre, all of Belgium, assignors to Glaverbel S. A., Watermael-Boitsfort, Belgium

Filed Sept. 12, 1969, Ser. No. 857,568

Claims priority, application Great Britain, Aug. 15, 1969, 40,891/69

Int. Cl. B32b 17/06

U.S. Cl. 161—43 10 Claims

An article containing at least one glass sheet which has been chemically tempered to create tensile stresses in an internal zone thereof and compressive stresses in external layers thereof, the chemical tempering being carried out in such a manner that, for at least a portion of the sheets, the arithmetic product of the thickness of such internal zone and of the maximum tensile stress in such zone is within a given range of values for which the sheet will fracture into large fragments under the impact of a small projectile and will fracture into small noncutting fragments under an impact of a large body approximating a human being.

3,639,199

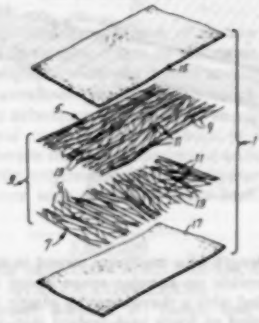
REINFORCED LAMINATE PRODUCT

Theodorus Gerardus Brandts; Joseph Alois Lichtenberger, both of Grand'Mere, Quebec, Canada, and Joseph Maria Bentvelzen, Raleigh, N.C., assignors to Consolidated Paper (Bahamas) Limited, Montreal, Quebec, Canada

Continuation-in-part of application Ser. No. 817,927, Apr. 21, 1969, now abandoned. This application Dec. 15, 1969, Ser. No. 885,201

Int. Cl. B32b 5/12, 27/10; D04h 1/04

U.S. Cl. 161—57 7 Claims



A laminated, nonwoven fabric product and method of making same comprising a central reinforcing web of fibrillated sheet plastic material having a plurality of substantially parallel fibers integrally interconnected at spaced points along their length and outer layers formed of cellulosic material.

3,639,200

TEXTURED WOOD PANEL

Armin Elmendorf; Thomas W. Vaughan, and Roland Etzold, all of 860 Charleston Road, Palo Alto, Calif.

Continuation of application Ser. No. 403,448, Oct. 9, 1964, now abandoned. This application Dec. 19, 1969, Ser. No. 889,842

Int. Cl. B27l 11/00; B32b 5/16, 21/02, 21/12, 21/14

U.S. Cl. 161—116 7 Claims

The invention relates to a ligno-cellulosic building board having a nonrepetitive textured surface on at least one side.

This side consists of a layer of ligno-cellulosic particles with elevations and depressions, the specific gravity of the particles of the elevations being substantially the same as the specific gravity of the particles in the depressions. The density of the fibers at the surface has therefore been equalized over the entire area of the board. In one form of the invention a layer of coarse particles is used, the sharpness of the edges of the coarse particles being concealed with fine particles.

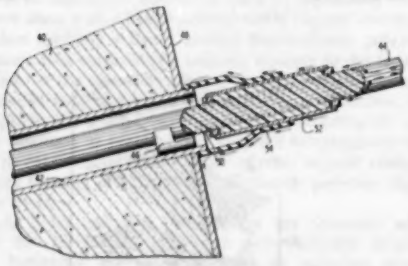
The product is produced by pressing a layer of binder coated ligno-cellulosic particles on a substrate in a hot plate press with a cushion, preferably of silicone rubber, between the hot platen of the press and the layer of particles.

3,639,201

SEAL FOR MULTIWIRE STRAND

Darral V. Humphries, Allentown, Pa., assignor to Bethlehem Steel Corporation

Filed Nov. 27, 1968, Ser. No. 779,536
Int. Cl. H02g *15/00*
U.S. Cl. 161—143 **1 Claim**



A short length of a multiwire strand is surrounded with a mold to provide an annular space about said length. Said space is filled with a thermosetting plastic sealant and pressure is applied to force said sealant into and along the interstices of said strand. During said application of pressure, the strand is circumferentially heated at the ends of said mold to provide a radial temperature gradient across said ends. Pressure is applied to said sealant until the ends of the seal are substantially convex.

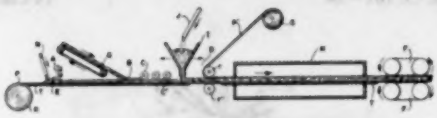
3,639,202

COMPLEX PRODUCTS OF RESIN AND MINERAL FIBER AND PROCESS FOR MAKING SAID PRODUCTS

Albert Simon, Mont-Saint-Aignan, France, assignor to Compagnie de Saint-Gobain, Neuilly sur Seine, Seine, France

Filed June 20, 1966, Ser. No. 558,981
Claims priority, application France, July 2, 1965, 23260
Int. Cl. B32b *5/14, 17/04*
U.S. Cl. 161—158 **17 Claims**

Rigid panels are made by pressing a layer of mineral fibers into a loaded stratum of hardenable resin, pressing another loaded stratum of hardenable resin into the mineral fiber stratum of the first pressing, the constitution or quantity of the third stratum differing from that of the first to provide equal mechanical properties at both faces of the sheet. The stratified sheet is then hardened and has density of load (particulate filler) increasing from the center toward the surfaces of the sheet. The sheet is preferably produced between outer



pellicles of organic plastic, e.g. cellulosic, which can be removed before use. Such sheets serve as roofing and wall paneling and may be corrugated or otherwise shaped during manufacture.

3,639,203

HIGHLY CRIMPABLE POLYAMIDE COMPOSITE FILAMENTS

Yoshio Tamura, and Satoshi Ando, both of Osaka, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan and Snia Viscosa Societa Nazionale Industria Applicacioni Viscosa S.p.A., Milan, Italy

Continuation-in-part of application Ser. No. 671,217, Sept. 28, 1967, now Patent No. 3,551,227. This application July 23, 1970, Ser. No. 57,770
Int. Cl. D02g *3/02*
U.S. Cl. 161—173 **13 Claims**

Production of polyamide composite filament having high crimpability, one component of which is polycapramide and the other component of which is a copolyamide consisting of 0.01 to 5 percent by weight of nylon salt composed of a dicarboxylic acid and a polyfunctional diamine having the general formula

$$H_2N-(CH_2)_n-R(CH_2)_n-NH_2,$$ wherein R is > CHCl or > CHBr and n is 3 to 11, 3 to 20% by weight of another nylon salt and 75 to 95% by weight of polycapramide forming components.

3,639,204

COMPOSITE POLYACRYLONITRILE FIBER

Makoto Ohki; Hisashi Irie, and Kazuo Okamoto, all of Osaka, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1969, Ser. No. 887,056
Claims priority, application Japan, Dec. 24, 1968, 43/94767
Int. Cl. D02g *3/02*
U.S. Cl. 161—173 **13 Claims**

A drawn composite filament consisting of two acrylic components differing in heat shrinkability eccentrically disposed along the filament axis, which is capable of developing, upon heating in relaxed condition, a uniform crimp having a high frequency, high degree of elasticity and large retention of the degree of elasticity. The higher shrinking component consists of a copolymer or terpolymer comprising 65–95 percent by weight of combined acrylonitrile and 35–5 percent by weight of a combined higher alkyl acrylate having five to 14 carbon atoms in its alkyl group, the lower shrinking component comprises acrylonitrile homopolymer, or copolymer or terpolymer containing up to 25 percent by weight of at least one combined monoethylenically unsaturated addition type monomer, and the product of the difference in shrinkability between the two components and the residual shrinking stress is at least 50.

3,639,205

PROCESS FOR TREATING CELLULOSIC MATERIALS FROM WHICH METAL IONS HAVE BEEN REMOVED WITH ALKALI AND OXYGEN IN THE PRESENCE OF COMPLEX MAGNESIUM SALTS

Sture Erik Olof Noreus, Sundasen, and Hans Olof Samuelson, Goteborg, both of Sweden, assignors to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Continuation-in-part of application Ser. No. 869,875, Oct. 27, 1969. This application May 12, 1970, Ser. No. 36,670

Int. Cl. D21c *3/00*

U.S. Cl. 162—23 33 Claims

Cellulosic materials from which metal ions have been removed by acids or complexing agents is delignified with alkali in the presence of oxygen, and particularly air, and in the presence of magnesium compounds such as, for instance, chelates of magnesium and aliphatic alpha- and beta-hydroxycarboxylic acids. The invention is of particular application to the reduction of lignin content in cellulose pulps without causing deleterious degradation of the cellulose, the magnesium compounds reducing or entirely preventing attack of oxygen on the hemicellulose and cellulose carbohydrates, without appreciably diminishing the oxidation of the lignin and its dissolution in the course of the process. The process is also useful to obtain a controlled dissolution of the hemicellulose.

3,639,206

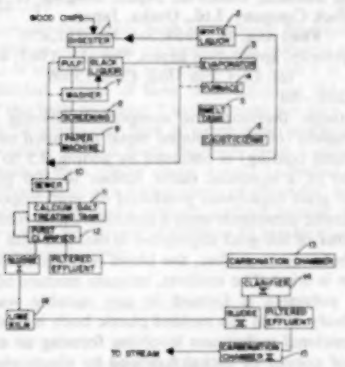
TREATMENT OF WASTE WATER FROM ALKALINE PULPING PROCESSES

Edgar L. Spruill, Jonesboro, La., assignor to Continental Can Company, Inc., New York, N.Y.

Filed July 29, 1969, Ser. No. 845,809

Int. Cl. D21f *1/66*

U.S. Cl. 162—29 6 Claims



Waste water effluent derived from the alkaline pulping processes and discharged from pulp and paper mills containing suspended wood fibrous solids and discolored with dissolved wood degradation products is treated first with calcium salts, such as CaO or $Ca(OH)_2$ to cause a substantial reduction in the fiber solid and color content of the effluent. The partially clarified effluent is then contacted with CO_2 gas to precipitate any dissolved calcium salts and the remainder of the wood degradation products and color bodies.

3,639,207

METHOD FOR DRYING NONWOVEN FABRIC

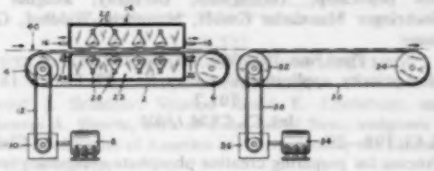
Heinz Genz, Willich; Dieter Berger; Dieter Pfleiderer, and Horst Seeliger, all of Lahnstein, all of Germany, assignors to Feldmuhle Aktiengesellschaft, Dusseldorf, Oberkassel, Germany

Filed July 11, 1969, Ser. No. 841,076

Claims priority, application Germany, July 15, 1968, P 17 61 850.7

Int. Cl. D21f *5/00*; D21h *5/12*

U.S. Cl. 162—146 3 Claims



A nonwoven web, formed on a continuous screen papermaking machine and including heat shrinkable fibers, is delivered onto an endless coarse wire screen and exposed to infrared radiation to heat the fibers and dry the web. Water vapors evolved in the drying process are swept from both surfaces of the web by forced streams of dry air.

3,639,208

POLYAMPHOTERIC POLYMERIC RETENTION AIDS

Fannie S. Varveri, Johnstown; Robert J. Jula, Ambridge, and Merwin Frederick Hoover, Bethel Park, all of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Mar. 4, 1968, Ser. No. 709,959

Int. Cl. D21h *3/58*

U.S. Cl. 162—168 5 Claims

The preparation and composition of certain amphoteric polymers, useful as retention aids in the paper industry, is disclosed. The polymers are formed from acrylamide and diallyl quaternary ammonium monomers, in which some of the amide groups are subsequently hydrolyzed to adjust the ratio of quaternary and carboxylic acid groups in the polymer molecule and wherein the diallyl compound undergoes an intramolecular cyclic polymerization. The polymer function as retention aids over wide ranges of alum loading and pH ranges.

3,639,209

A PROCESS OF MAKING PAPER USING CATIONIC STARCH COMPLEXES

Stanley J. Buckman; Richard W. Lutey, and George M. Jennings, all of Memphis, Tenn., assignors to Buckman Laboratories, Inc., Memphis, Tenn.

Filed Apr. 7, 1970, Ser. No. 26,434

Int. Cl. D21h *3/28*

U.S. Cl. 162—175 12 Claims

Cationic starch complexes prepared by reacting an aqueous starch slurry with a water-soluble cationic polymeric polyelectrolyte are useful in treating cellulosic materials and as flocculating agents in aqueous systems.

3,639,210

FERMENTATION PROCESSES UTILIZING GASEOUS HYDROCARBONS

Katsuncbu Tanaka, Machida-shi; Kazuo Ohshima, Tokyo; Kazuo Kimura, and Masaki Yamamoto, both of Machida-shi, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed May 2, 1968, Ser. No. 726,228

Claims priority, application Japan, May 15, 1967, 42/30402

Int. Cl. C12d *13/06*

U.S. Cl. 195—28 R 7 Claims

A process for producing organic compounds, such as for example, amino acids, various organic acids, vitamins,

saccharides, nucleic acid-related substances, cells of micro-organisms, and the like, which comprises culturing a micro-organism capable of producing said organic compounds in an aqueous nutrient medium under aerobic conditions and in the present of gaseous hydrocarbons as the main carbon source. Hydrocarbon-assimilating strains of the genus *Brevibacterium*, preferably *Brevibacterium ketoglutamicum*, are employed.

3,639,211

PROCESS FOR THE PREPARATION OF CREATINE PHOSPHATE

Klaus Beaucamp, Tutzinglobb, Germany, assignor to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany

Filed Nov. 19, 1968, Ser. No. 792,182
Claims priority, application Germany, Nov. 29, 1967, P 16 43 701.7
Int. Cl. C12d *13/06*
U.S. Cl. 195—29 **11 Claims**

Process for preparing creatine phosphate comprising incubating in an alkaline medium creatine and 3-phosphoglyceric acid with an aqueous muscle extract in the presence of a catalytic amount of adenosine triphosphate, heating the resulting mixture for a short period of time to a temperature of 70° to 100° C. and recovering the creatine phosphate which is thereby formed.

3,639,212

PROCESS FOR THE PREPARATION OF ESTRANE COMPOUND BY FERMENTATION

Makoto Shirasaka; Katsumi Tanabe; Atsushi Naito, and Masako Ieki, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed Aug. 12, 1968, Ser. No. 751,735
Int. Cl. C07c *167/14*
U.S. Cl. 195—51 F **3 Claims**

Estrane compounds that are known to be useful as sex hormones or as intermediates thereof are prepared by subjecting 19-hydroxyandrostane starting compounds to the action of *Corynebacterium equi* or to the action of the enzyme produced by said micro-organism under aerobic conditions in the presence of a surface active agent of the fatty acid ester series such as Tween 80, said starting compound being incorporated into a culture medium at a concentration of 2 to 3 w/v percent.

3,639,213

STREPTOKINASE CHEMICALLY BONDED TO A CARBOHYDRATE MATRIX

Leonard George Ginger, Glenview, and Adaline Nicoles Mather, Evanston, both of Ill., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Dec. 2, 1969, Ser. No. 881,632
Int. Cl. C07g *7/02*; **A61k** *19/00*
U.S. Cl. 195—63 **16 Claims**

One part by weight of streptokinase is chemically bonded to 1 to 500 parts by weight of a carbohydrate, to form a material which has improved stability compared with free streptokinase.

3,639,214

PRODUCTION OF 6-DEMETHYLTETRACYCLINE

Clive Kenneth Mercer, and George Desmond Wilkin, both of Nottingham, England, assignors to The Upjohn Company, Kalamazoo, Mich.

Filed June 4, 1964, Ser. No. 372,696
Int. Cl. C12d *9/18*
U.S. Cl. 195—80 **1 Claim**

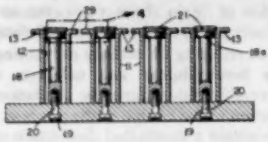
This invention relates in an improved method for manufacturing antibiotics of the tetracycline group by growing a micro-organism of the class consisting of Streptomyces aureofaciens NC1B 9501, Streptromyces aureofaciens NC1B9502, and mutants and variants thereof aerobically in an aqueous fermentation medium containing a source of carbon and nitrogen and mineral salts, and recovering the antibiotic from the medium.

3,639,215

METHOD OF JOINING PARTS BY PLATING

Herbert D. Van Sciver, II, Merion, and Michael Mattia, Upper Darby, both of Pa., assignors to The Budd Company, Philadelphia, Pa.

Filed Dec. 7, 1970, Ser. No. 95,549
Int. Cl. C23b *7/00, 5/56*
U.S. Cl. 204—16 **3 Claims**



A method of joining a number of parts by electrodeposition is provided. The component parts are accurately positioned on a fixture in spaced-apart relationship. The spaces between adjacent parts are filled in first with a resinous material and then with a conductive coating after which a metal is then deposited on the adjacent parts bridging the spaces therebetween.

3,639,216

IMPROVING ADHESION OF ELECTROPLATED METAL ON GRAFT COPOLYMERS

Toramitsu Sakuma, Osaka-fu, Japan, assignor to Sumitomo Naugatuck Company, Ltd., Osaka, Japan

Filed Aug. 14, 1968, Ser. No. 752,470
Claims priority, application Japan, Nov. 11, 1967, 42/72464
Int. Cl. C23b *5/60*; **C08f** *15/00*
U.S. Cl. 204—30 **5 Claims**

A synthetic thermoplastic composition having excellent plate adhesion (of electroplated metal deposited on an electroless metal coating) is obtained by adding 0.5 to 5.0 parts by weight of a synthetic diene rubber to 100 parts thermoplastic graft copolymer produced by graft copolymerization of vinylic monomers onto a synthetic diene rubber. Typically a latex of the graft copolymer is blended with a latex of the synthetic diene rubber, the blend is coagulated, and the coagulum is dried. The uniform, intimate mixture of the latex blended polymers is formed in any suitable way into a molded body. When this molded plastic body is electroplated by conventional techniques involving forming an electroless coating of copper or nickel followed by electroplating, significantly enhanced plate adhesion is achieved.

3,639,217

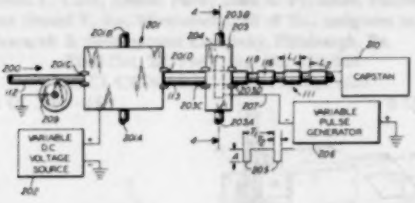
METHOD OF PRODUCING IN SERIATIM SEPARATE COATINGS ON A CONDUCTOR

Harold Barry Shukovsky, Lawrenceville, and Theodore Elwyn Torok, Raritan Township, Hunterdon County, both of N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed June 11, 1969, Ser. No. 832,142
Int. Cl. C23G *5/50*; **B01R** *3/00*; **G11g** *5/00*
U.S. Cl. 204—35 R **3 Claims**

Selected, spaced regions of a conductor having a continuous, electrically sensitive film coated thereon are subjected

to electrolytic deplating to completely remove the film from



the selected regions and expose the underlying conductor.

3,639,218

SHELF LIFE IMPROVEMENT OF ELECTROPLATED SOLDER

Leo Missel, Palo Alto, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 8, 1969, Ser. No. 864,863
Int. Cl. C23b *5/50*
U.S. Cl. 204—40 **1 Claim**

The coating of electroplated solder, applied in preparation for a solder reflow operation, has a short shelf life. The shelf life can be greatly extended, without raising the melting point or detracting from the bond strength, by electroplating a layer of bright tin over the coating of electroplated solder.

3,639,219

IRIDIUM PLATING

Robert M. Skomoroski, Paterson, N.J., assignor to The International Nickel Company, Inc., New York, N.Y.

Filed Dec. 24, 1969, Ser. No. 888,039
Int. Cl. C23b *5/24*
U.S. Cl. 204—47 **4 Claims**

An iridium electroplating bath is prepared by digesting an aqueous solution of iridium trichloride and sulfamic acid in a molar ratio of sulfamic acid to iridium of at least 7 at 100° C. for an extended period of time then adjusting the iridium content of the bath to about 3 to 20 grams per liter, adding about 3 to 20 grams per liter of ammonium sulfamate and electrodepositing iridium from the bath upon a conductive substrate with a bath pH of about 1 to 7 (adjusted by ammonia additions) and at a temperature of about 50° to 75° C. with insoluble anodes and a cathode current density of about 0.1 to 8 amperes per square decimeter to produce adherent crack-free iridium deposits.

3,639,220

ELECTRODEPOSITION OF NICKEL

Charles F. Fuchs, Evanston, Ill., and Henry Brown, Huntington Woods, Mich., assignors to Udylite Corporation, Warren, Mich.

Filed July 27, 1970, Ser. No. 58,700
Int. Cl. C23b *5/08, 5/46*
U.S. Cl. 204—49 **16 Claims**

It has been found that certain unsaturated aliphatic sulfonic acids characterized by having four aliphatic carbon atoms and two separate aliphatic unsaturated linkages, such as the allene sulfonic acid $CH_2=C=C-CH_2SO_3H$ are excellent when used in acidic nickel plating baths in making it possible to obtain lustrous ductile nickel plate over a very wide plating range. These sulfonic acids do not have critical upper concentration limits.

3,639,221

PROCESS FOR INTEGRAL COLOR ANODIZING

Geoffrey Austin Dorsey, Jr., Danville, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Dec. 22, 1969, Ser. No. 887,145
Int. Cl. C23b *9/02*
U.S. Cl. 204—58 **4 Claims**

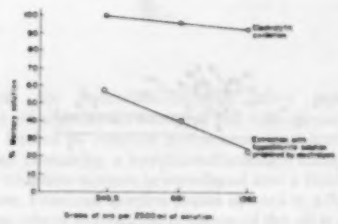
A process for integral color anodizing of aluminum and aluminum alloys wherein the aluminum piece is subjected as an anode to electrolysis in an aqueous solution containing sulfuric acid, and at least one compound selected from the group consisting of molybdates, tungstates, vanadates and manganates, a portion of which exists in a polyacid species.

3,639,222

EXTRACTION OF MERCURY FROM MERCURY-BEARING MATERIALS

Bernard J. Scheiner, Sparks; Roald E. Lindstrom, and Thomas A. Henrie, both of Reno, all of Nev., assignors to The United States of America as represented by the Secretary of the Interior

Filed Oct. 30, 1970, Ser. No. 85,573
Int. Cl. C01g *13/04;* **C22d** *1/10*
U.S. Cl. 204—94 **3 Claims**



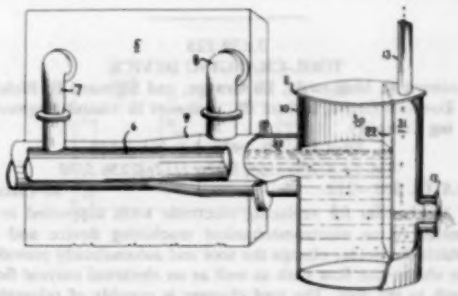
Mercury is leached from mercury-bearing materials by electrolytic oxidation of the material in a NaCl electrolyte solution.

3,639,223

CHLORATE CELL

Richard J. Blanchfield, Chateauguay, Quebec, and John F. Smith, Montreal, Quebec, both of Canada, assignors to Standard Chemical Limited, Montreal, Quebec, Canada

Filed Sept. 18, 1970, Ser. No. 73,308
Int. Cl. C01b *11/26;* **B01k** *1/00*
U.S. Cl. 204—95 **3 Claims**



An improvement in the operation of chlorate cells is described in which the product liquor flow from one or a plu-

rality of electrolytic alkali metal chlorate cells is fed to a collection zone provided with a baffling arrangement such that hydrogen gas disengaging from the cell liquor does so under a liquid seal that separates it from the gases in the cell liquor outlet. The liquid seal for disengaging hydrogen from the liquor insures that there is no direct communication between the gases being disengaged and the gases in the interior of the cells and in the cell liquor outlet lines. The described improvement prevents any explosion or fires which may occur in hydrogen vents and/or collection equipment from reaching the interior of the alkali metal chlorate cells. Thus, fires which may occur in hydrogen gas lines as the result of sparks, lightning and other similar phenomena are prevented from reaching the interior of the cells.

3,639,224

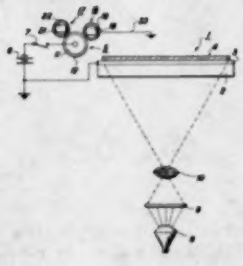
PHOTOELECTROPHORETIC IMAGING SYSTEM

Robert W. Gundlach, Victor, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed June 2, 1969, Ser. No. 829,624

Int. Cl. G03g *13/22*

U.S. Cl. 204—181 **10 Claims**



A photoelectrophoretic imaging system is disclosed wherein a thermoconductive material such as polyethylene is used as the blocking electrode of the system. The thermoconductor is heated to discharge static electricity accumulated on its surface and cooled to restore its high insulating property. The heating and cooling is accomplished by using heated rollers, gas streams and infrared radiation.

3,639,225

TOOL-CHANGING DEVICE

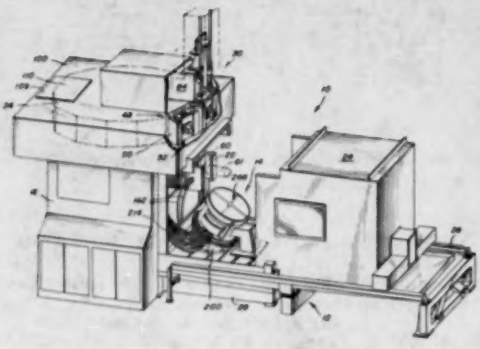
Leonard R. Malkowski, La Grange, and Sigmund H. Bielak, Downers Grove, both of Ill., assignors to Anocut Engineering Company

Filed Jan. 20, 1970, Ser. No. 4,209

Int. Cl. C23b *5/68;* **B23p** *1/12;* **C23b** *5/70*

U.S. Cl. 204—212 **25 Claims**

Mechanism for replacing electrode tools supported in a holder of an electromechanical machining device and in which the holder clamps the tool and automatically provides an electrolyte flow path as well as an electrical current flow path to the tool. The tool changer is capable of releasably supporting a plurality of electrode tools, with each tool capable of being selectively aligned with the tool holder. The tool-changing device further includes mechanism for automatically removing the electrode tool from a tool support and placing the electrode tool in the holder. The entire operation is designed to be automatically performed without the necessity of an operator making any connections or disconnections.



3,639,226

SYNERGISTIC DEWAXING AND COMPOSITION

Richard O. Henselman, North Plainfield, and Herbert G. Burkard, Convent Station, both of N.J., assignors to Esso Research and Engineering Company

Continuation of application Ser. No. 795,357, Jan. 30, 1969, now abandoned , which is a continuation-in-part of application Ser. No. 539,326, Apr. 1, 1966, now abandoned. This application June 15, 1970, Ser. No. 46,557

Int. Cl. C10g *43/06, 43/08*

U.S. Cl. 208—37 **9 Claims**

A wax modifying composition comprising the combination of (1) a Friedel-Crafts condensation product of a halogenated paraffin with an aromatic hydrocarbon and (2) an oil soluble copolymer of ethylene and a C_3–C_{28} alpha olefin, or a terpolymer of ethylene with a C_3–C_{28} alpha olefin and a minor amount of a nonconjugated diolefin. The copolymer and terpolymer may be improved by oxidation to form hydroperoxy materials followed by reduction to form reduced oxygenated compounds.

3,639,227

CHLORIDE ADDITION DURING HYDROGENATION

Robert L. Jacobson, Pinole, and Burwell Spurlock, Lafayette, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Nov. 17, 1969, Ser. No. 877,429

Int. Cl. C10g *23/04*

U.S. Cl. 208—143 **7 Claims**

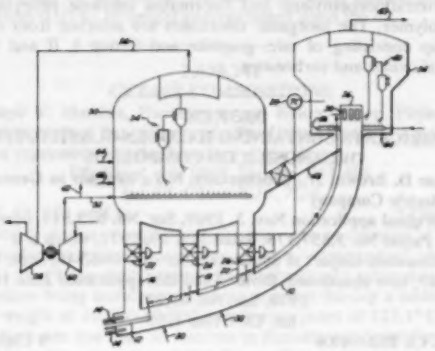
A process for hydrogenation of an unsaturated hydrocarbon feedstock at an elevated temperature and pressure in a hydrogenation zone by (a) contacting the feedstock, in the presence of hydrogen, with a hydrogenating catalyst containing at least one noble metal on an alumina support and containing no essentially irreversibly sulfided metal (such as nickel, cobalt, or molybdenum), and (b) adding a chloride to the hydrogenation zone and reacting the chloride with the catalyst in an amount sufficient to increase hydrogenation activity of the catalyst.

3,639,228

FCC PROCESS UTILIZING DIVIDED CATALYST INJECTION

Norman L. Carr, Allison Park; John A. Paraskos, Pittsburgh, and Daniel Y. Ko, Monroeville, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Oct. 28, 1969, Ser. No. 870,046
Int. Cl. C01b *33/28*; C10g *11/18*, *11/20*
U.S. Cl. 208—153 6 Claims



A fluid catalytic cracking system in which hydrocarbon feed and a zeolite catalyst or a catalyst of comparable activity and/or selectivity to gasoline is charged to a reactor having a short residence time is improved by charging only a portion of the fresh or freshly regenerated catalyst which is used to the inlet of the reactor together with the hydrocarbon feed and charging the remainder of the freshly regenerated catalyst substantially without hydrocarbon feed downstream in the reactor. This arrangement results in a higher gasoline yield and a higher selectivity to gasoline in the reactor.

3,639,229

REFINING OF USED LUBRICATING OILS

Darrell W. Brownawell, Scotch Plains, and Remi H. Renard, North Brunswick, both of N.J., assignors to Esso Research and Engineering Company

Filed June 29, 1970, Ser. No. 50,976
Int. Cl. C10g *27/100*
U.S. Cl. 208—181 10 Claims

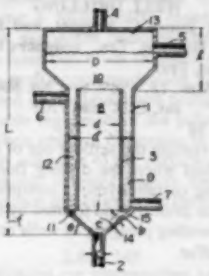
Used lubricating oils, particularly those containing additives such as V. I. improvers, dispersants and the like, are reclaimed by a preliminary treat with a C_4 to C_5 aliphatic alcohol, which causes the separation of a layer of sludge which contains polar additives and oxidation products. The desludged oil is then subjected to conventional lubricating oil refining steps such as treatment with fuming sulfuric acid followed by neutralizing, washing, and clay treating steps. Alternatively, the desludged oil is subjected to a hydrogenation treatment rather than the sulfuric acid treatment. Extraction with phenol, furfural, etc. can also be included, as well as redistillation or fractionation. Advantages over prior art oil reclaiming processes include higher yields of finished reclaimed oil, the formation of appreciably less byproduct sludge, and the obtaining of a more oxidation-resistant reclaimed oil.

3,639,230

HYDRODESULFURIZATION OF HEAVY PETROLEUM HYDROCARBON OIL IN A FLUIDIZED REACTION ZONE

Yutaka Oguchi, and Junichi Kubo, both of Tokyo, Japan, assignors to Yoshio Tomonaga President of Agency of Industrial Science and Technology, Tokyo, Japan

Filed Mar. 25, 1969, Ser. No. 810,108
Claims priority, application Japan, Mar. 30, 1968, 43/20415. The portion of the term of the patent subsequent to June 8, 1987, has been disclaimed.
Int. Cl. C10g *23/06*
U.S. Cl. 208—213 6 Claims



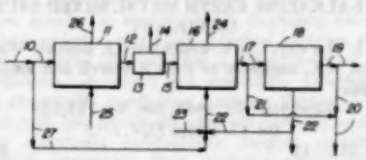
A process for hydrodesulfurizing heavy petroleum hydrocarbon oil wherein the heavy oil and hydrogen-containing gas are heated to reaction temperature and introduced into a reactor containing a hydrodesulfurization catalyst and wherein the reaction mixture is introduced into a fluidization initiating zone. Fluidized mixture passes upward in a fluidized reaction zone where hydrodesulfurization of the oil is carried out; the mixture is separated in a separating zone from which liquid hydrodesulfurized product is withdrawn free of substantially all of said catalyst, and catalyst is allowed to settle in a catalyst settling zone. The reactor is designed so that (1) the sectional area of said separating zone is at least 1.1 times the sum of the sectional areas of said fluidized reaction zone and said catalyst settling zone and (2) the volume of said catalyst settling zone is smaller than the volume of said fluidized reaction zone.

3,639,231

DESALINATION PROCESS

Sidney A. Bresler, New York, N.Y., assignor to Bresler and Associates Inc., New York, N.Y.

Filed Nov. 13, 1970, Ser. No. 89,429
Int. Cl. B01d *13/00*, *15/04*
U.S. Cl. 210—23 12 Claims



Brackish water is desalinated by contacting it with one or more ion exchange resins followed by reverse osmosis. Brine rejected in reverse osmosis treatment can be used to regenerate a used ion exchange resin.

3,639,232

FIRE-RETARDANT FINISH FOR NYLON

Claus Wyman Busch, Jr., Greensboro, N.C., assignor to American Cyanamid Company, Stamford, Conn.

Filed Apr. 24, 1968, Ser. No. 723,951
Int. Cl. C09d 5/18; C09k 3/28; B32b 27/08
U.S. Cl. 252—8.1 3 Claims

A composition for imparting fire retardancy to nylon textiles, comprising highly methylolated urea, thiourea and ammonium chloride; the method of imparting fire retardancy to nylon textiles; and a nylon textile having fire-retardant properties.

3,639,233

WELL DRILLING

Roger L. Schultz; James C. Baggett, and Raymond E. McGlothlin, all of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 18, 1969, Ser. No. 808,344
Int. Cl. C10m 1/08
U.S. Cl. 252—8.5 M 8 Claims

Method for preventing the settling out of a weighting agent from a drilling fluid when the drilling fluid is substantially water free by using certain hydroxy compounds such as 1,2-ethanediol, and the drilling fluid formed by the method. Also, a method for preventing plugging of wells containing substantial amounts of sulfur.

3,639,234

VICINAL GLYCOL BORATES AS TEXTILE SOFTENERS

Harold Eugene Wixon, New Brunswick, and George Vane Scott, Scotch Plains, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Oct. 29, 1969, Ser. No. 872,383
Int. Cl. D06m 13/20
U.S. Cl. 252—8.6 7 Claims

A textile softening composition containing effective amounts of vicinal glycol borates.

3,639,235

ANTISTATIC CARDING LUBRICANT

Gerhart Karg, Pompton Lakes, N.J., assignor to Witco Chemical Company, Inc., New York, N.Y.

Filed Mar. 6, 1968, Ser. No. 710,759
Int. Cl. D06m 13/00
U.S. Cl. 252—8.75 16 Claims

A water-emulsifiable antistatic carding lubricant for textile processing comprising a mixture of a mineral oil, a phosphoric acid ester of an ethyoxylated linear aliphatic alcohol, an alkanolamine, a long chain fatty acid, sulfonated sperm oil, an ethoxylated linear aliphatic alcohol and oleic diethanolamide.

3,639,236

COLLOIDAL ASBESTOS-COMPLEX ALUMINUM SALT-ALKALI-ALKALINE EARTH METAL MIXED SALT/SOAP LUBRICANT

Arnold J. Morway, Clark, and Albert J. Bodner, Watchung, both of N.J., assignors to Esso Research and Engineering Company

Filed Mar. 25, 1968, Ser. No. 715,529
Int. Cl. C10m 1/24, 1/10
U.S. Cl. 252—13 8 Claims

A lubricating grease containing lubricating oil, a complex fatty acid salt thickener, a complex aluminum salt and colloidal asbestos demonstrates excellent structural stability, extreme pressure properties and resistance to hardening under static conditions at high temperatures. The colloidal asbestos is distinguished over art-known asbestos by its randomly oriented, mattelike flakes and agglomerates of visible asbestos filaments.

3,639,237

EXTREME PRESSURE GREASES

George G. Curtis, Westfield, N.J., assignor to Esso Research and Engineering Company

Filed May 14, 1969, Ser. No. 824,675
Int. Cl. C10m 1/30, 1/10
U.S. Cl. 252—13 10 Claims

A lubricating grease having extreme pressure (e.p.) properties comprising a major amount of lubricating oil and minor amounts of colloidal asbestos, finely divided polymeric fluorocarbon powder having a melting point (m.p.) above 450° F. and a powdered inorganic grease thickener. The colloidal asbestos is characterized by its chrysolite configuration and by its separate distinct fibers. The polymeric fluorocarbon is selected from the group consisting of polytetrafluoroethylene and fluorinated ethylene propylene copolymer. The inorganic thickeners are selected from the group consisting of talc, graphite and Group I, II and IV metal oxides and carbonates.

3,639,238

LUBRICANTS CONTAINING HALOGEN-SUBSTITUTED ORGANOSILICON COMPOUNDS

Edgar D. Brown, Jr., Schenectady, N.Y., assignor to General Electric Company

Original application Nov. 3, 1969, Ser. No. 873,511, now Patent No. 3,557,175, dated Jan. 19, 1971, which is a continuation-inpart of application Ser. No. 666,948, Sept. 11, 1967, now abandoned. Divided and this application June 10, 1970, Ser. No. 45,231
Int. Cl. C10m 1/50
U.S. Cl. 252—49.6 9 Claims

Lubricating compositions useful for lubricating high-temperature alloys are prepared by adding organosilicon compounds containing silicon-bonded ethyl groups substituted with iodine, with bromine or chlorine, and with alkoxy, acyloxy or hydroxy groups to oils of lubricating viscosity. The organosilicon compounds are prepared by adding I_2 and Br_2, I_2 and Cl_2, IBr, or ICl to vinyl-substituted silanes and siloxanes in the presence of alcohols or carboxylic acids or with subsequent water treatment.

3,639,239

BIS(TRIORGANOSILYL)PHOSPHATE COMPOSITIONS

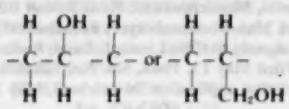
Eugene D. Groenhof, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Sept. 17, 1969, Ser. No. 858,886
Int. Cl. C10m 1/50, 1/46
U.S. Cl. 252—49.9 2 Claims

Disiloxy derivatives of fluoroalkyl acid phosphates of the general formula

$$X(CF_2)_m(CH_2)_nOP(OSiCH_2CH_2R_f)_2$$
$$\quad\quad\quad

where R is an alkyl, alkenyl, alkaryl or alkenaryl radical; Z is oxygen or a methylene radical; y is a number from 1 to 4, R_2 is



and R_3 is a radical which remains when y hydroxyl groups are removed from a polyhydric alcohol anhydride. The base polyhydric alcohol anhydrides for R_3 contains at least one hydroxyl group and at least four carbon atoms and the rust inhibitor contains at least one alkyl or alkenyl radical of at least eight carbon atoms. The rust inhibitor is used at levels of from 0.09 to 10 weight percent based upon the oil.

3,639,241
GREASE COMPOSITIONS

Joseph F. Messina, Havertown, and Henry Gisser, Philadelphia, both of Pa., assignors to The United States of America as represented by the Secretary of the Army

Filed Sept. 26, 1969, Ser. No. 861,486
Int. Cl. C10m *7/28, 7/24*
U.S. Cl. 252—54.6 **2 Claims**

Stable grease compositions for use with equipment at extremely low temperatures, the greases consisting of about 64.1 to 69.4 weight percent bis(2-ethylhexyl) sebacate, the balance being tetrafluoroethylene polymer having a molecular weight of 10,000-50,000, a softening point of 321.1° C., a particle size less than 30 microns in diameter, and supplied as a 7.5 percent suspension in trichlorotrifluoroethane.

3,639,242
LUBRICATING OIL OR FUEL CONTAINING SLUDGE-DISPERSING ADDITIVE

William Monroe Le Suer, Cleveland, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of application Ser. No. 717,429, Mar. 29, 1968, now abandoned. This application Dec. 29, 1969, Ser. No. 4,180
Int. Cl. C10m *1/26*
U.S. Cl. 252—56 R **13 Claims**

High molecular weight, oil-soluble, mono- and polycarboxylic acid esters are posttreated with mono- or polycarboxylic acid acylating reagents to provide compositions useful as dispersants in lubricants and fuels. Esters of polyisobutenyl-substituted succinic anhydride and pentaerythritol post-treated with maleic anhydride exemplify the process and compositions of this invention.

3,639,243
LIQUID DEVELOPER ELECTROPHOTOGRAPHY

Zenjiro Okuno, and Hazime Machida, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Nov. 13, 1967, Ser. No. 682,512
Claims priority, application Japan, Nov. 21, 1966, 41/76102
Int. Cl. G03g *9/04*
U.S. Cl. 252—62.1 **5 Claims**

A liquid developer for electrophotography, which is prepared by dispersing, in a suitable carrier liquid, either independently or together with a surface active agent, a toner which is obtained by the so-called graft-copolymerization technique by a direct chemical bonding between a pigment and unsaturated compounds having a dispersing effect and a large electric charge polarity controlling ability, or more specifically, unsaturated compounds capable of chemically bonding to pigment, resulting in a large and distinct electric charge polarity of said toner in the carrier liquid and also capable of facilitating the dispersion of said particles in said carrier liquid which consists of a paraffinic hydrocarbon (including both isoparaffinic and paraffinic hydrocarbons) having a relatively high-electric resistance and a low-dielectric constant.

3,639,244
LIQUID DEVELOPER FOR USE IN ELECTROPHOTOGRAPHY

Hazime Machida, and Zenjiro Okuno, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

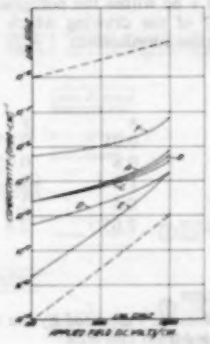
Filed May 8, 1968, Ser. No. 727,651
Claims priority, application Japan, May 15, 1967, 42/30426
Int. Cl. G03g *9/04*
U.S. Cl. 252—62.1 **5 Claims**

A liquid developer for use in electrophotography, comprising a copolymerically grafted pigment toner dispersed in a carrier liquid consisting of a paraffinic or an isoparaffinic hydrocarbon having a high-electric resistance and a low-dielectric constant, said toner being prepared by subjecting the particles of at least two kinds of pigments each having a benzenoid ring to graft copolymerization with at least three kinds of unsaturated compounds each being capable of contributing to the stable regulation of the polarity of said particles of pigments, their uniform dispersion in the carrier liquid and the satisfactory adhesion of the particles onto the surface of electrophotographic copying papers thereby chemically uniting said compounds directly to said particles of pigments.

3,639,245
DEVELOPER POWER OF THERMOPLASTIC SPECIAL PARTICLES HAVING CONDUCTIVE PARTICLES RADIALLY DISPERSED THEREIN

Robert B. Nelson, Lake Elmo, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed July 22, 1968, Ser. No. 746,691
Int. Cl. G03g *9/02*
U.S. Cl. 252—62.1 **8 Claims**



Flowable, heat fusible, dry powder suitable for use as a developer powder in electrographic recording which comprises thermoplastic, essentially spherical particles, the thermoplastic material of which has a conductivity of at most 10^{-12} mho/cm., in which are essentially completely embedded electrically conductive particles forming a radially disposed zone, said essentially spherical particles having:

a. an electronic conductivity ranging monatonically without decreasing from between about 10^{-11} and 10^{-4} mho/cm. in a 100 v./cm. DC electrical field to between about 10^{-9} and 10^{-3} mho/cm. in a 10,000 v./cm. DC electrical field,

b. a number average particle diameter below 15 microns, and

c. a volume ratio of said electrically conductive particles to said total particle volume of between 0.01/100 and 4/100.

3,639,246

LIQUID DEVELOPERS FOR ELECTROSTATIC PHOTOGRAPHY

Tetsuro Otsuka, Takatsuki-shi; Isao Ota, Osaka-shi, and Shinichi Ogo, Moriguchi-shi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of application Ser. No. 526,713, Feb. 11, 1966, now abandoned. This application July 19, 1968, Ser. No. 747,020

Int. Cl. G03g *9/04*

U.S. Cl. 252—62.1 **4 Claims**

An improved liquid developer composition for converting a latent electrostatic image into a visible image and for fixing the visible image into a permanent visual record, consists essentially of carrier liquid comprising e.g. trichlorotrifluoroethane or carbon tetrachloride and having a high electrical resistance, 0.005 to 0.1 percent by weight of finely divided pigment powder (Fe_3O_4, TiO_2, graphite) dispersed or suspended in said liquid, 0.001 to 0.3 percent by weight of metal naphthenate (cobalt naphthenate, nickel naphthenate, manganese naphthenate) which dissolves in said liquid and which comprises 4 to 10 percent by weight of metal ions, and 0 to 1 percent by weight of insulating oil.

3,639,247

CALCIUM-VANADIUM SERIES FERRIMAGNETIC GARNETS

Hideo Takamizawa; Keiichi Yotsuyanagi, and Takashi Okada, all of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan

Filed Feb. 4, 1970, Ser. No. 8,491

Claims priority, application Japan, Feb. 7,1969, 44/9410, June 27, 1969, 44/51190

U.S. Cl. 252—62.57 **3 Claims**

Calcium-vanadium ferrimagnetic garnets having the compositions expressed by the formula:

$\{Ca_{3-y}y_y\}[Fe_2](Fe_{1.5-0.5x+0.5y}Ge_xV_{1.5-0.5x-0.5y})O_{12}$, wherein values of x and y lie within the polygonal area A-B-C-D-E shown in Fig. 7 of the drawing which is bounded by the lines connecting the coordinates:

	x	y
A	0.05	0.05
B	0.8	0.05
C	1.8	1.1
D	0.5	2.4
E	0.05	2.4

and wherein the range expressed by the relation $0.95 \leq y-z \leq 1.05$ is excluded from said area.

3,639,248

BLEACHING COMPOSITION

John R. Moyer, and William G. Moore, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 12, 1968, Ser. No. 712,363

Int. Cl. C07c *73/10;* **D061** *3/02*

U.S. Cl. 252—186 **14 Claims**

In a method for preparing dry stable bleaching and oxidizing compositions containing at least one peroxygen compound and at least one organic acid anhydride, the improvement which comprises: absorbing the organic acid anhydride on a particulate inert absorbent material, providing said absorbed material in a predetermined granulated size range, and mixing said granulated product with at least one peroxygen compound to prepare a novel solid bleaching and oxidizing composition which is stable over prolonged periods of time.

3,639,249

BIS-OXALIC ACID ESTER AMIDES FOR USE AS ULTRAVIOLET STABILIZERS

Christian Luethi, Muenchenstein; Hans Rudolf Biland, Gelterkinden, and Max Duennenberger, Frenkendorf, all of Switzerland, assignors to Ciba Limited, Basel, Switzerland

Filed May 13, 1968, Ser. No. 728,836

Claims priority, application Switzerland, May 16, 1967, 6902/67

Int. Cl. F21v *9/06*

U.S. Cl. 252—300 **6 Claims**

The present invention provides a process for protecting organic materials that can be damaged by ultraviolet light from the effects of ultraviolet rays, characterized in that a bis-oxalic acid amide ester is incorporated with, or applied to the surface of the materials to be protected, or a filter layer containing the bis-oxalic acid amide esters is placed in front of said materials, the said bis-oxalic acid amide ester corresponding to the formula $A_1-O-CO-CO-NH-W_1-NH-CO-CO-O-B_1$ in which A_1 and B_1 are identical or different and each represents an organic residue and should not displace the absorption maximum of these compounds to values above 370mμ; W_1 represents an organic residue and X_1 represents an alkylene group containing one to four carbon atoms or a bridge member $-O-$, $-S-$, $-N-$ or $-SO_2-$.

Furthermore the invention discloses a certain class of novel symmetric bis-oxalic acid amide esters as defined by formula (6) of the specification and a process for the manufacture of the symmetric bis-oxalic acid amide esters defined above.

3,639,250

PHOTOTROPIC COMPOSITION OF MATTER

John B. Schutt, Silver Spring; Joe A. Colony, Lanham, and Donald R. Lepp, District Heights, all of Md., assignors to The United States of America as represented by the National Aeronautics and Space Administration

Filed Aug. 1, 1968, Ser. No. 749,320

Int. Cl. F21v *9/06*

U.S. Cl. 252—300 **8 Claims**

The invention provides a phototropic composition of matter suitable for use in producing directly a positive photographic image comprising at least one member of the group consisting of lithium and lithium-containing substances with at least one member of the group consisting of titanium dioxide, and alkaline earth titanates, and with at least one member of the group consisting of elements from groups 1A, 2A, 3B, 4B, 5B, 6B, 7B, 8, 1B, 2B, 3A, 4A, 5A, and the rare earth or outer transition series including cerium through lutecium in the periodic table, and compounds thereof, the mixture being heated until it is sensitive to ultraviolet light upon cooling.

3,639,251

LIQUID DYE FILTERS WITH NARROW PASSBANDS

Karl Wurm, Oberaudorf/Inn, Germany, assignor to The United States of America as represented by the Secretary of the Air Force

Filed July 22, 1968, Ser. No. 745,467

Int. Cl. G02b *5/24*

U.S. Cl. 252—300 **3 Claims**

Liquid dye filters for passing narrow spectral bands in astrophysical observations where combinations of various compounds in solution in methanol and acetone are used as dyes in thin layers between Pyrex glass plates to produce a homogeneous filter which selectively absorbs the major portion of the spectrum in and near visible light allowing only a narrow band in the λ3,000 to λ4,500 A. range to pass.

3,639,252

ORANGE-RED EMITTING EUROPIUM-ACTIVATED YTTRIUM STANNATE PHOSPHOR FOR WARM-WHITE BLENDS

Ernest Paul Riedel, Murrysville, and Thelma J. Isaacs, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 26, 1970, Ser. No. 5,901
Int. Cl. C09k *1/56*
U.S. Cl. 252—301.4 F **3 Claims**

The luminescent composition $Y_2Sn_2O_7:Eu^{+3}$, exhibits a spectral energy distribution which principally comprises two lines at about 588.6 nanometers and 596.7 nanometers. This composition can be used as a specialty phosphor for this orange emission, or as a blend constituent in efficiently providing well-balanced white light.

3,639,253

PREPARATION OF HALOPHOSPHATE PHOSPHORS USING ANTIMONY-DOPED CALCIUM PYROPHOSPHATE

George R. Gillooly, Cleveland Heights, Ohio, assignor to General Electric Company

Filed Jan. 28, 1970, Ser. No. 6,584
Int. Cl. C09k *1/36*
U.S. Cl. 252—301.4 P **9 Claims**

Antimony-doped calcium pyrophosphate is used as the antimony-supplying ingredient in the manufacture of calcium halophosphate phosphors activated with antimony or antimony plus manganese. The extreme fineness and high reactivity of the antimony-supplying materials and their low volatility at lower temperatures are significant advantages in the manufacture of the phosphors.

3,639,254

ALKALINE EARTH THIOGALLATE PHOSPHORS

Thomas E. Peters, Levittown, N.Y., assignor to GTE Laboratories Incorporated

Filed July 1, 1969, Ser. No. 838,065
Int. Cl. C09k *1/12*
U.S. Cl. 252—301.4 S **19 Claims**

A phosphor system consisting of alkaline earth and alkali metal thiogallates activated by europium, lead, or cerium. These phosphors are photoluminescent and cathodoluminescent and are suitable for use in fluorescent lamps or cathode-ray tube screens.

3,639,255

PROCESS OF DISPERSING OIL SLICKS

Guy Boardman, and Fred Dawson, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Apr. 24, 1968, Ser. No. 723,881
Claims priority, application Great Britain, May 3, 1967, 20,589/67
Int. Cl. B01j *13/00*
U.S. Cl. 252—312 **6 Claims**

A process of dispersing oil slicks on natural water areas using a water-insoluble condensate of 1 mole of monohydric aliphatic alcohol having 11 to 20 carbon atoms (or mixtures) with from 1.5 to 6.0 moles of ethylene oxide as an emulsifier is disclosed.

3,639,256

ENCAPSULATION PROCESS BY COMPLEX COACERVATION USING INORGANIC POLYMERS

Georg Horger, Steppach, Germany, assignor to The National Cash Register Company, Dayton, Ohio

Filed May 27, 1970, Ser. No. 41,110
Int. Cl. A61k *9/04*; **B01j** *13/02*; **B44d** *1/02*
U.S. Cl. 252—316 **5 Claims**

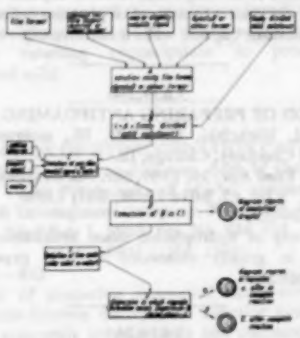
A process is disclosed for manufacturing capsules, en masse, by use of a liquid-liquid phase separation which includes certain inorganic material as complexing, phase-separation-inducing, polymer. The disclosed process is conducted in an aqueous capsule manufacturing vehicle and the material which emerges as a liquid phase is an aqueous solution of organic hydrophilic polymeric material and inorganic polymeric material complexed together. The liquid-liquid phase separation of this invention is the type generally named "complex" coacervation wherein the separated, emergent, liquid phase includes a major portion of both, the organic hydrophilic polymeric material and the phase-separation-inducing material; in this invention, inorganic polyacid polymeric material. The organic polymeric material and the inorganic polymeric material are complexed together by virtue of opposite electrical charges, the complex is at least partially immiscible with the manufacturing vehicle, and the manufacturing vehicle contains only a minor amount of either polymeric material. Preferred materials for use in practicing the present invention include gelatin as the organic hydrophilic polymeric material and polymolybdates and polytungstates as the inorganic polymeric phase-separation-inducing material.

3,639,257

MICROCAPSULES AS CARRIERS FOR COLOR REACTION COMPONENTS IN COLOR REACTION PAPER AND PROCESS OF MAKING SAID MICROCAPSULES

Ludwig Harbort, Hannover, Germany, assignor to Gunther Wagner Pelikan-Werke, Hannover, Germany

Filed June 24, 1968, Ser. No. 739,363
Claims priority, application Germany, June 23, 1967, W 44228; June 24, 1967, W 44240
Int. Cl. B01j *13/02*; **B44d** *1/02*
U.S. Cl. 252—316 **2 Claims**



Process of making microcapsules as carriers for encapsulated solid or liquid color components in color reaction papers, wherein particles of finely divided solid substances are incorporated in the capsule walls during the formation of the capsules by chemical reaction from a film forming component dissolved in the dispersed phase of a liquid dispersion system, which contains dissolved in its continuous phase a low-molecular weight reactant for the film-forming component; also contained in the dispersion system are said solid particles to be incorporated into the walls of the microcapsules. Very high percentages of solid particles, i.e., considerably higher than 100 percent calculated on the weight of the capsule wall, can thus be incorporated into the latter thereby increasing the resistance of the walls to mechanical stress far above the limit of known microcapsules.

3,639,258

GELLED FLOATING ROOF FOR STORAGE TANKS AND PITS AND PROCESS FOR FORMING SAME

Edward R. Corino, Belleville, and Gerard P. Canevari, Cranford, both of N.J., assignors to Esso Research and Engineering Company

Filed July 30, 1968, Ser. No. 748,587
Int. Cl. B01j 1/18, 13/00; C10l 7/00
U.S. Cl. 252—316 13 Claims

A novel and inexpensive floating roof for tank and pit storage of crude oil and other petroleum products is formed in place by gelling a thin surface layer of oil using gelling agents in low concentration. The gelling agent employed is the reaction product of a diisocyanate and either an amine or an alcohol, which reaction product is a urea-type molecule which ultimately forms the gel with the oil. The layer of gelled oil floats on the surface of the material being stored and follows changes in its level. In sloping-wall pits the gelled layer readily adjusts to the changing wall contours while at the same time substantially reducing volatile and wind entrainment losses, fire hazards and water entrapment.

3,639,259

ENZYMATIC TREATMENT OF GELLED PROTEINACEOUS FILM MATERIAL

Joseph A. Scarpelli, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Apr. 9, 1969, Ser. No. 814,824
Int. Cl. B01j 13/02; B44d 1/44
U.S. Cl. 252—316 10 Claims

A method is disclosed for treating proteinaceous films or preformed capsule walls with proteolytic enzymes to afford cold-water solubility. According to the process of this invention, preformed films or capsule walls are partially degraded enzymatically, in an aqueous vehicle, to such a degree that the degraded proteinaceous material is rendered soluble in cold water at some desired or required temperature of use. Such treatment of already made films or capsule walls is contrasted with enzymatic treatment of proteins before manufacture of the films or capsule walls themselves.

3,639,260

METHOD OF PREPARING ANTIFOAMING AGENT

Raymond J. Michalski, Riverdale, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Filed Apr. 16, 1969, Ser. No. 816,796
Int. Cl. B01d 19/04; B01j 13/00
U.S. Cl. 252—358 2 Claims

The activity of hydrophobic silica antifoamers in an oil dispersion is greatly enhanced by the presence of a polyfluorosilicate.

3,639,261

PROCESS FOR THE GENERATION OF SYNTHESIS GAS FROM OIL

William L. Slater, La Habra, Calif., assignor to Texaco Inc., New York, N.Y.

Filed Mar. 27, 1968, Ser. No. 716,448
Int. Cl. C01b 2/14
U.S. Cl. 252—373 3 Claims

Process for the production of synthesis gas from hydrocarbon liquids by direct partial oxidation with oxygen-containing gas and steam wherein oil containing carbon recovered from the process is supplied to a flow-type synthesis gas generator maintained at an autogenous temperature within the range of 1,800–3,000°, effluent gas from the reaction zone is cooled by indirect heat exchange to a temperature above the dew point of the product gas stream, and the product gas stream scrubbed with liquid hydrocarbon at a temperature above the dew point of water vapor contained in said product gas and below the boiling point the hydrocarbon liquid and resulting hydrocarbon liquid containing recovered carbon is supplied to the gas generation zone as part of the feedstock for the production of synthesis gas.

3,639,262

EMULSIFYING AGENTS

John G. Milligan, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

Continuation of application Ser. No. 420,179, Dec. 21, 1964, now abandoned. This application June 5, 1968, Ser. No. 734,558
Int. Cl. A01n 17/10; B01f 17/12; B01j 13/00
U.S. Cl. 252—355 8 Claims

An emulsifying agent for use in the preparation of water dispersible toxicant solutions which is storage stable on standing and which consists essentially of a mixture of an anionic surface active agent component and a nonionic surface active agent component, viz., an ethylene oxide adduct of an alkylphenol; the anionic component consisting essentially of amine salt of alkyl aromatic sulfonic acid; the amine being a diamine or triamine wherein the amine groups are separated by carbon atoms, oxygen atoms and/or very weakly basic nitrogen atoms, at least five in number.

3,639,263

CORROSION INHIBITION WITH A TANNIN, CYANOHYDRINATED LIGNOSULFONATE, AND AN INORGANIC METAL SALT COMPOSITION

Edwin S. Troscinski, Oak Lawn, and Reed S. Robertson, Glen Ellyn, both of Ill., assignors to Nalco Chemical Company, Chicago, Ill.

Filed July 31, 1968, Ser. No. 748,916
Int. Cl. C23f 11/14
U.S. Cl. 252—389 9 Claims

A corrosion-inhibiting composition and process consisting of (a) a water-dispersible tannin, (b) a cyanohydrinated lignosulfonate or naphthalene sulfonate, and (c) a polyvalent metal ion masking agent for the chelating system, e.g., zinc nitrate.

3,639,264

LIQUID LEAD STABILIZERS FOR VINYL CHLORIDE POLYMERS AND COPOLYMERS

Michel Roussos, Lyon, and Yves Bourgeois, Paris, both of France, assignors to Melle-Bezons, Melle (Deux-Sevres), France

Filed Apr. 25, 1968, Ser. No. 724,274
Claims priority, application France, Apr. 27, 1967, 104340
Int. Cl. C08f 45/62
U.S. Cl. 252—400 12 Claims

Stabilization of vinyl chloride polymers and copolymers against heat or light decomposition and composition for use in the practice of same wherein the composition is formed of a solution of a basic lead salt having the general formula $(R\text{-}COO)_2Pb.nPbO$, in which R is a branched-chain alkyl radical having from seven to 12 carbon atoms and n is a number of from 0.5 to 2 and in which solution is in a hydrocarbon solvent having a boiling point within the range of 100° to 180° C. or in a plasticizer ester.

3,639,265

METHANE FOR REGENERATING ACTIVATED CARBON

Homer R. Johnson, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Mar. 13, 1970, Ser. No. 19,501
Int. Cl. B01d 15/06; B01j 11/02
U.S. Cl. 252—411 R 2 Claims

In a process where sulfur oxides have been removed from gas streams by adsorption onto activated carbon in the form of sulfuric acid, regeneration of the sulfuric acid laden activated carbon is accomplished in two stages by first contact the carbon at a temperature below 570° F. with hydrogen sulfide to form sulfur dioxide, which is recovered, and elemental

sulfur which remains adsorbed on the carbon. The carbon with elemental sulfur adsorbed thereon is then contacted in the second stage with methane or natural gas at temperatures between from 800° to 1,300° F. to form hydrogen sulfide for the first stage and carbon disulfide. The addition of water, as steam, to the second stage converts the carbon disulfide to additional amounts of hydrogen sulfide for use in the first stage.

3,639,266

CARBONIZATION OF COMPRESSED CELLULOSE CRYSTALLITE AGGREGATES

Orlando A. Battista, Yardley, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of application Ser. No. 435,744, Feb. 26, 1965, now abandoned. This application Apr. 8, 1968, Ser. No. 719,717

Int. Cl. C01b *31/08*

U.S. Cl. 252—421 **5 Claims**

Shaped, pure carbon structures are formed by compacting a binderless mass of cellulose crystallite aggregates to solidify the mass and heating the solidified mass to a carbonizing temperature in an oxygen-free atmosphere. The structure may be activated by heating in steam or carbon dioxide.

3,639,267

ORGANOZINC CATALYST COMPOSITION

Edwin J. Vandenberg, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of application Ser. No. 18,862, Mar. 31, 1960, now Patent No. 3,536,634, dated Oct. 27, 1970. This application Dec. 19, 1969, Ser. No. 886,774

Int. Cl. C07f *3/06*

U.S. Cl. 252—431 **7 Claims**

New catalysts are provided for the polymerization of epoxides and episulfides by reacting a dihydrocarbon zinc, such as a dialkylzinc, with water, a polyol or a polyhydric phenol in a molar ratio of said compound to the dihydrocarbon zinc within the range of from about 0.2 to about 1.2 and preferably within the range of 0.4 to 1.0. The exact nature of the zinc compound produced by the reaction is not known but it is essential that it retain some of the zinc-to-carbon bonds present in the dihydrocarbon zinc being so reacted.

3,639,268

CATALYST COMPRISING A FLUORINE-CONTAINING LAYERED CRYSTALLINE ALUMINOSILICATE, AND PREPARATION AND USE THEREOF

Joseph Jaffe, Berkeley, and James R. Kittreill, El Cerrito, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Aug. 21, 1968, Ser. No. 754,491

Int. Cl. B01j *11/82, 11/40*

U.S. Cl. 252—437 **10 Claims**

A hydrotreating catalyst comprising fluorine-containing layered crystalline aluminosilicate particles in a matrix comprising at least one solid oxide and at least one hydrogenating component, said hydrogenating component being selected from Group VI metals and compounds thereof and Group VIII metals and compounds thereof, and processes for making and using said catalyst.

3,639,269

CATALYST FOR THE OXIDATION OF ALKENES

Edgar Koberstein, Alzenau; Theodor Lussling, Gross-Auheim; Ewald Noll, Gross-Krotzenburg; Helmut Suchsland, Gross-Auheim, and Wolfgang Weigert, Offenbach, Main, all of Germany, assignors to Deutsche Gold und Silber Scheideanstalt vormals Roessler, Frankfurt (Main), Germany

Filed Aug. 25, 1969, Ser. No. 852,932

Claims priority, application Germany, Aug. 31, 1968, P 17 92 424.2

Int. Cl. B01j *11/82*

U.S. Cl. 252—437 **6 Claims**

A catalyst for the oxidation of alkenes to unsaturated aldehydes and carboxylic acids containing Ni, Co, Fe, Bi, P, Mo and O is improved by adding tantallum oxide or samarium oxide. The catalyst can be employed on a carrier.

3,639,270

CATALYST COMPOSITION FOR OXYCHLORINATING HYDROCARBONS AND PROCESS FOR PREPARING THE CATALYST COMPOSITION

Shunichi Koyanagi; Kinya Ogawa, and Fumio Akiya, all of Niigata-ken, Japan, assignors to Shin Etsu Chemical Co., Ltd., Tokyo, Japan

Filed May 21, 1968, Ser. No. 730,926

Claims priority, application Japan, May 23, 1967, 42/32744

Int. Cl. B01j *11/78*

U.S. Cl. 252—441 **3 Claims**

Catalyst composition suitable for the oxychlorination of hydrocarbons. The catalyst composition has superior thermal stability, a long-lasting catalytic activity and essentially consists of cupric chloride and a tantalum fluoride salt which are deposited on a porous carrier.

3,639,271

METHOD FOR MAKING MULTI-COMPONENT CATALYSTS

James R. Kittrell, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 3, 1969, Ser. No. 881,883

Int. Cl. B01j *11/78, 11/40*

U.S. Cl. 252—441 **3 Claims**

Method for producing a coprecipitated solid comprising a crystalline zeolitic molecular sieve, at least one metal oxide having isomerization activity, at least one hydrogenating component and a component comprising titanium, comprising coprecipitating at a pH of 8.2 to 10.2 a mixture comprising said crystalline zeolitic molecular sieve, a precursor compound of said metal oxide, a precursor compound of said hydrogenating component, and a compound of titanium, at least of one of said compounds being a metal chloride, reducing the chloride content of the resulting coprecipitate below about 0.25 weight percent of the whole weight thereof, and drying the resulting coprecipitate to produce said coprecipitated solid.

3,639,272

PREPARATION OF HYDROGENATION CATALYSTS

George E. Elliott, Jr.; Jean Salomon, both of Oakmont, and Roger F. Vogel, Pittsburgh, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed July 1, 1969, Ser. No. 838,334

Int. Cl. B01j *11/78, 11/40*

U.S. Cl. 252—442 **10 Claims**

A method of preparing supported nickel-tungsten and nickel-tungsten-fluorine catalysts of superior hydrogenating activity, by separately impregnating and calcining a porous support material with a water-soluble tungsten salt and a solution of a nickel salt in which the support is washed following impregnation with the nickel salt prior to calcination to fix the nickel.

3,639,273

CATALYST COMPOSITION COMPRISING A MIXTURE

Robert J. Houston, San Rafael, and Sigmund M. Csicsery, Lafayette, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed July 11, 1969, Ser. No. 840,916

Int. Cl. B01j *11/40*

U.S. Cl. 252—455 R **9 Claims**

A composition of matter useful particularly for reforming comprising a physical particle form mixture of (1) a layered crystalline clay type aluminosilicate and (2) a platinum group component in association with an alumina carrier or a silica carrier.

3,639,274

ELECTRICAL RESISTANCE COMPOSITION

Ivan L. Brandt, Fox Point, and Orville R. Penrod, Milwaukee, both of Wis., assignors to Allen Bradley Company, Milwaukee, Wis.

Continuation-in-part of application Ser. No. 573,856, Aug. 22, 1966, now abandoned. This application Sept. 6, 1967, Ser. No. 667,321

Int. Cl. H01b *1/02*

U.S. Cl. 252—514 11 Claims

An electrical resistance composition comprising finely divided metals such as the noble metals dispersed in a glass matrix and further including an additive taken from the group consisting of gallium, indium, thallium, arsenic, antimony, bismuth and combinations thereof so as to improve the electrical properties of the composition—particularly the TCR.

3,639,275

STABLE DIELECTRIC FLUID FOR ELECTRICAL DISCHARGE MACHINING COMPRISING A MINERAL OIL, A METAL SULFONATE AND A PHENOLIC ANTIOXIDANT

Robert A. Stayner, Palos Verdes Estates, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed June 10, 1968, Ser. No. 735,578

Int. Cl. H01b *3/22*

U.S. Cl. 252—63.5 5 Claims

Dielectric fluids are provided for electrical discharge machines comprising a primarily aliphatic light oil of low viscosity having in minor amounts an oil soluble metal sulfonate detergent and a phenolic antioxidant.

3,639,276

CORROSION-INHIBITING THERMAL INSULATION FOR STAINLESS STEEL

Arthur P. Mueller, Cincinnati, Ohio, assignor to Panacon Corporation, Cincinnati, Ohio

Continuation-in-part of application Ser. No. 846,591, July 31, 1969, now abandoned. This application Nov. 4, 1970, Ser. No. 86,970

Int. Cl. C04b *43/04, 35/16, 43/02*

U.S. Cl. 252—62 13 Claims

Molded thermal insulation material for use in contact with austenitic stainless steel chemical-processing equipment, to inhibit stress corrosion cracking thereof, consists of at least 60 percent by weight of cellular expanded perlite, bonded by a dried, inorganic, water soluble binder. The binder consists of a major proportion of a mixture of sodium silicate and potassium silicate and a minor proportion of sodium hexametaphosphate, and the molecular ratio of the silica to the alkaline oxide is at least 3.6 to 1.0. The potassium silicate consists of at least about 40 percent, by dry weight, of the total silicate in the dried binder, and the total binder constitutes at least about 20 percent, by weight, of the total insulation composition. In the manufacture of the molded insulation, the mixture of perlite and the binder, in slightly damp condition, is placed in the mold cavity and subjected to light molding pressure, sufficient to compact the material into the exact configuration of the mold cavity without expelling water from the mixture. The molded insulation is removed from the mold and oven dried at a temperature of about 250° F.

3,639,277

HIGH WATER CONTENT MICELLAR DISPERSIONS USEFUL AS HYDRAULIC FLUIDS

Fred Poettmann, and Stanley C. Jones, both of Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Apr. 30, 1968, Ser. No. 725,488

Int. Cl. C09k *3/02*

U.S. Cl. 252—78 12 Claims

An oil-external micellar dispersion exhibiting good fire-resistant properties and viscosity properties is obtained by the composition: (a) from about 71.5 to about 90 percent aqueous medium; (b) up to about 30 percent hydrocarbon; (c) at least about 4 percent of surfactant sufficient to impart micellar characteristics to "a" and "b" and, (d) from about 0.001 to about 20 percent cosurfactant. Extreme pressure agents, antifoam agents, corrosion and oxidation inhibitors, bactericides, scale inhibitors, added alkalinity, etc. can be incorporated within the composition.

3,639,278

COMPOSITION AND METHOD FOR INHIBITING AND REMOVING SCALE USING GLYCOLIC ACID AND LIGNOSULFONIC ACID

Chih M. Hwa, Arlington Heights, Ill., assignor to W. R. Grace & Co., New York, N.Y.

Filed Dec. 27, 1967, Ser. No. 693,770

Int. Cl. C02b *1/20, 5/06*

U.S. Cl. 252—82 8 Claims

Alkaline earth salt scale formation from aqueous solutions of the respective salts is inhibited by maintaining glycolic acid alone or together with lignosulfonic acids in the aqueous solutions. Existing alkaline earth salt scales can be removed from surfaces by contacting the scaled surfaces with aqueous solutions of higher concentrations of the glycolic acid and the lignosulfonic acid. Both lignosulfonic acid and its water-soluble salts can be used in the composition.

3,639,279

SCALE REMOVAL COMPOSITION AND METHOD USING SALT OF DIGLYCOLIC ACID AND BASE AT PH ABOVE 5

Tommy R. Gardner; Reginald M. Lasater, and John A. Knox, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Apr. 1, 1969, Ser. No. 812,436

Int. Cl. C02b *5/06*; C23f *13/00*; C23g *1/18*

U.S. Cl. 252—86 40 Claims

Methods and compositions for removing scale from surfaces, particularly from subsurface and surface equipment associated with oil and gas wells, and industrial equipment such as heat exchangers, condensers, boilers and the like. The scale to be removed is dissolved in aqueous basic solutions of diglycolic acid salts, mixtures of diglycolic acid salts and hydroxy acid salts, and mixtures of diglycolic acid salts and substituted acid salts of diamines or tertiary amines.

3,639,280

AIR FILTER COATING COMPOSITIONS CONTAINING MIXTURE OF SILICA AND MAGNESIUM SILICATE GELLING AGENTS

Charles Andrew Lynch, Jr., Severna, and James P. Hamilton, Pasadena, both of Md., assignors to FMC Corporation, New York, N.Y.

Filed Sept. 28, 1967, Ser. No. 671,222

Int. Cl. C01b *33/14, 33/22*; C09k *3/22*

U.S. Cl. 252—88 3 Claims

This application discloses triorganic phosphate coating compositions for viscous-impingement air filters in which the triorganic phosphate is thickened by a combination of about 0.1 to 1.0 parts of a magnesium silicate, with at least 10 percent of its particles which are less than 1 micron in any dimension and whose silica to magnesia ratio is about 1.05 to about 1.30 to 1, and 0.1 to 3 parts of pyrogenic silica having a particle size no greater than 0.025 microns. These gel compositions have good high-temperature viscosity stability and exhibit low syneresis losses. Satisfactory gels can be prepared using as little as one percent pyrogenic silica with 0.5 percent of the magnesium silicate.

3,639,281

BUILT DETERGENT COMPOSITIONS CONTAINING TRIS(METHYL PHOSPHONIC ACID) PHOSPHINE OXIDE AND ITS SALTS

Ludwig Maier, Tiergartenstrasse 17, Kilchberg, Zurich, Switzerland, assignor to Monsanto Company, St. Louis, Mo.

Original application Dec. 14, 1967, Ser. No. 690,418. Divided and this application Jan. 12, 1970, Ser. No. 7,431

Int. Cl. C02b 5/06; C11d 3/36

U.S. Cl. 252—89 1 Claim

Phosphorus compounds containing the skeleton P—(C—P)$_2$ or P—(C—P)$_3$ of the formula $P(O)_a(R^1)_b[CH_2P(O)(R^2R^3)b\text{-}3_{-b}$ and method for making by reacting a compound of the formula $P(O)_a(R^1)_b(CH_2Cl)_{3-b}$ with a compound of the formula $P(R)^3)(R^4)OR^4$ to split off R^4Cl. Also uses of the products as threshold agents, sequestering agents, detergent composition additives, peroxy solution stabilizers and chlorine releasing agent stabilization is claimed.

3,639,282

HYPOCHLORITE BLEACHING OF MONOOLEFINIC HYDROCARBON SULFONATES

Samuel H. Sharman, Kensington, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed July 1, 1968, Ser. No. 741,656

Int. Cl. C11d 1/12

U.S. Cl. 252—95 6 Claims

In the reduction of color in an aliphatic sulfonate detergent by heating an aqueous solution containing the sulfonate and hypochlorite bleach, improved decolorization is obtained by concurrently aerating the mixture.

3,639,283

FOAM-CLEANING ADDITIVES, COMPOSITION AND METHODS

Homer Edward Crotty, Cincinnati, Ohio, assignor to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of application Ser. No. 540,212, Apr. 5, 1966, now abandoned. This application Oct. 10, 1969, Ser. No. 865,527

Int. Cl. C11d 7/06, 7/08, 7/56

U.S. Cl. 252—98 5 Claims

The invention disclosed is for a new improved foamable industrial cleaning composition having either a highly acid or highly basic character and containing an effective foam generating and stabilizing assistant.

3,639,284

BLEACHING COMPOSITION

Alfred Long, New Haven, and Duane L. Sawhill, Orange, both of Conn., assignors to Olin Corporation

Filed Aug. 14, 1969, Ser. No. 850,225

Int. Cl. C11d 7/56

U.S. Cl. 252—99 8 Claims

Bleaching compositions, substantially free from "pinholing" textiles are prepared by mixing calcium hypochlorite, sodium tripolyphosphate and diluent salts in particulate form and in specified ratios, compacting to form aggregates, disintegrating the aggregates to form homogeneous granules and sizing the granules.

3,639,285

NOVEL BLEACHING COMPOSITIONS AND USE THEREOF

Donald R. Nielsen, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of application Ser. No. 584,969, Oct. 7, 1966, now abandoned, Continuation-in-part of application Ser. No. 308,323, Sept. 12, 1963, now abandoned. This application July 23, 1969, Ser. No. 859,521

Int. Cl. C11d 7/54

U.S. Cl. 252—100 7 Claims

Stability of perphthalic acids is improved by alkali metal or alkaline earth metal salts of an acid with an ionization constant at 25° C. for the first hydrogen of at least 1×10^{-3}. The mixtures can be protectively coated with water removable coatings. Magnesium salts enhance the bleaching effect of diperisophthalic acid.

3,639,286

SYNTHETIC DETERGENT IN BAR OR CAKE FORM AND THE METHOD TO MANUFACTURE SAME

Mario Ballestra, Corso Buenos Aires 92, and Domenico Triberti, Via Burlamacchi 11, both of Milan, Italy

Continuation-in-part of application Ser. No. 487,328, Sept. 14, 1965, now abandoned. This application May 28, 1968, Ser. No. 732,537

Int. Cl. C11d 9/10

U.S. Cl. 252—109 2 Claims

The invention concerns a solid detergent product in bar or cake form prepared by mixing an organic detergent material with an alkali salt of trimetaphosphate, water and an alkali metal hydrate.

3,639,287

MANUFACTURE OF SPRAY-DRIED DETERGENTS CONTAINING SODIUM TRIPOLYPHOSPHATE

Hellmut Gabler, Morlenbach; Heinz Harnisch, Weiden-Lovenich; Gero Heymer, Knapsack near Cologne; Karl Merkenich, Hurth near Cologne, and Wolf-Dieter Pirig, Euskirchen, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack bei Cologne, Germany

Filed Aug. 16, 1967, Ser. No. 660,928

Claims priority, application Germany, Sept. 1, 1966, K 60149

Int. Cl. C11d 3/06, 11/00, 11/02

U.S. Cl. 252—135 3 Claims

Sodium tripolyphosphate-containing detergents are produced by the spray-drying of a spray slurry containing the detergent components, the slurry being prepared with the use of sodium tripolyphosphate formed at least partially of material with a crystal water content between a maximum of less than 22.7 percent by weight and a minimum of 17.0 percent by weight.

3,639,288

DETERGENT SLURRY PROCESS

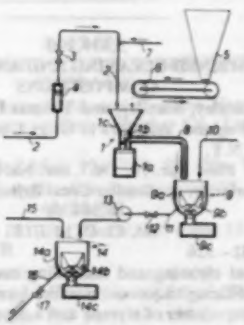
Frederik Johan Kerkhoven, and Seyer Troost, both of Vlaardingen, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Mar. 20, 1968, Ser. No. 714,523

Claims priority, application Netherlands, Mar. 21, 1967, 6704145

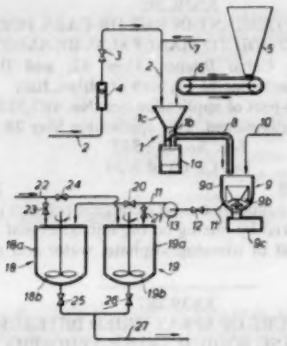
Int. Cl. C11d 3/06, 11/02

U.S. Cl. 252—135 3 Claims



Detergent compositions are produced by heat-drying a slurry containing small crystals of sodium tripolyphosphate

hexahydrate. The small crystals are formed by dispersing anhydrous sodium tripolyphosphate in water prior to its hydration with the water and subsequently other constituents of the composition are admixed with the slurry. An apparatus for forming detergent slurries is described.



3,639,289

PROCESS FOR THE MANUFACTURE OF NONCAKING BLENDS COMPRISING SODIUM TRIPOLYPHOSPHATE HEXAHYDRATE AND SODIUM NITRILO TRIACETATE MONOHYDRATE OR DIHYDRATE, AND THEIR USE AS DETERGENTS, CLEANSING OR RINSING AGENTS

Gero Heymer, Knapsack near Cologne; Herbert Landgraber, Lechenich, and Karl Merkenich, Effern near Cologne, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack bei Cologne, Germany

Filed June 16, 1969, Ser. No. 833,666
Claims priority, application Germany, June 18, 1968, P 17 67 780.4
Int. Cl. C11d *7/16, 7/32, 11/00*
U.S. Cl. 252—137 7 Claims

Production of noncaking blends comprised of sodium tripolyphosphate hexahydrate and sodium nitrilotriacetate monohydrate or dihydrate. The sodium tripolyphosphate is used in the form of its high- and/or low-temperature modification(s) and a fine mist of an aqueous sodium nitrilotriacetate solution having a temperature between about 0° and 80° C. is sprayed thereonto. When an excess of water is used, a gas and/or air stream is simultaneously passed over the sprayed material to evaporate the water in excess.

3,639,290

COMBINED CLEANING AND ANTISOILING COMPOSITIONS

Charles Fearnley, Romiley, and Thomas Ivor Jones, Poynton, both of England, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

Filed Apr. 10, 1967, Ser. No. 629,431
Claims priority, application Great Britain, Apr. 14, 1966, 16,308/66
Int. Cl. C11d *3/18*
U.S. Cl. 252—526 27 Claims

Combined cleaning and antisoiling compositions containing a stabilizing aqueous nonfilm-forming dispersion of homo- or copolymer of styrene and a detergent-mixture comprising sulphate-type detergent and foam stabilizing agent, which compositions are useful for cleaning fiber and fiber assemblies and at the same time leaving on the treated material an antisoil finish; a method of treating the said materials to improve appearance or inhibit deterioration thereof; and fibers and fiber assemblies treated by such method.

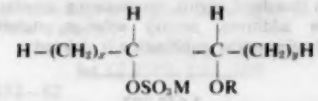
3,639,291

SURFACTANT COMPOSITION AND LIQUID DETERGENT FORMULATIONS CONTAINING SAME

Edward A. Casey, St. Louis, and James M. Huggins, St. Ann, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 25, 1969, Ser. No. 852,871
Int. Cl. C11d *1/38, 1/12*
U.S. Cl. 252—548 9 Claims

Surfactant compositions comprising from 25 to 75 percent by weight of alkyl vicinal alkyl ether sulfates having the formula:



where x and y are integers from 0 to 15, the sum of $x+y$ being from 13 to 15, R is an alkyl group containing from one to eight carbon atoms, and M is an alkali metal or ammonium and, correspondingly from 75 to 25 percent by weight of a linear alkylbenzene sulfonate when utilized in liquid detergent formulations provide improved performance as composed to either ingredient of the surfactant composition when used alone in a comparable formulation.

3,639,292

INHIBITING THE PRECIPITATION AND/OR DEPOSITION OF FERRIC HYDROXIDE IN AQUEOUS SYSTEMS

Patricia G. Gilby, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Dec. 22, 1969, Ser. No. 887,381
Int. Cl. C02b *5/06*
U.S. Cl. 252—179 11 Claims

Disclosed is a process for inhibiting the precipitation and/or the deposition of ferric hydroxide on the internal surfaces of the equipment (e.g. heat exchangers and pipes) in aqueous systems, particularly aqueous cooling systems. The process comprises adding certain resin polymers, namely those of U.S. Pat. No. 3,215,654, to the aqueous systems.

3,639,293

SLIME CONTROL METHOD AND COMPOSITION OF BETABROMO-BETANITROSTYRENE AND BIS-(TRICHLOROMETHYL)-SULFONE

Bernard F. Shema, Glenside; Robert H. Brink, Jr., Doylestown, and Paul Swered, Philadelphia, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Jan. 2, 1970, Ser. No. 435
Int. Cl. C02b *1/18*
U.S. Cl. 252—180 12 Claims

The present invention relates to certain processes and compositions useful for inhibiting the growth of slime in water employed for industrial purposes, particularly water employed in the manufacture of pulp paper, water employed in cooling water systems, as well as other industrial waters. The novel processes and compositions of the present invention are processes or mixtures which show unexpected synergistic activity against micro-organisms, including bacteria, fungi and algae, which produce slime in aqueous systems and bodies which are objectionable from an operational or aesthetic point of view. Specifically, the invention is directed to compositions comprising a mixture of bis-(trichloromethyl)-sulfone and bromonitrostyrene and their use.

3,639,294

FLAME-RETARDANT, POLYURETHANE COATING COMPOSITIONS

Joseph P. Burns; Joseph Feltzin, and Erich Kuehn, all of Wilmington, Del., assignors to Atlas Chemical Industries, Inc., Wilmington, Del.

Filed Dec. 9, 1968, Ser. No. 782,409
Int. Cl. C09d 5/18
U.S. Cl. 252—182 8 Claims

Polyurethane coating compositions are provided which, after application to substrates, yield transparent coatings having superior flame retardancy and resiliency. The coating compositions comprise a solvent and a polyurethane reaction product of halogen-containing polyol, phosphorus-containing product, and organic polyisocyanate.

3,639,295

FLAME-RETARDANT, POLYURETHANE COATING COMPOSITIONS

Joseph P. Burns; Joseph Feltzin, both of Wilmington, Del., and Frank T. Sanderson, Huntington Valley, Pa., assignors to Atlas Chemical Industries, Inc., Wilmington, Del.

Filed Dec. 9, 1968, Ser. No. 782,484
Int. Cl. C09d 5/18
U.S. Cl. 252—182 9 Claims

Polyurethane coating compositions are provided which, after application to substrates, yield transparent coatings having superior flame retardancy and resiliency. The coating compositions comprise a solvent and a polyurethane reaction product of halogen containing polyol, phosphorus containing polyol, and organic polyisocyanate.

ERRATUM

For Class 252—390 see:
Patent No. 3,639,431

3,639,296

ANTISTATIC COMPOSITIONS AND METHOD OF RENDERING TEXTILES ANTISTATIC

Herbert Frotscher, Langenfeld, Rhineland, and Manfred Petzold, Dusseldorf-Holthausen, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

No Drawing. Filed Dec. 26, 1967, Ser. No. 693,077
Claims priority, application Germany, Jan. 13, 1967, H 61,551
The portion of the term of the patent subsequent to Oct. 16, 1984, has been disclaimed
Int. Cl. C08g 23/00
U.S. Cl. 260—2 R 9 Claims

A novel method of providing fabrics made partially or entirely of synthetic fibers with wash resistant and dry cleaning resistant antistatic finish and the fabrics produced thereby and novel compositions used in said process. Said compositions are condensation products of (A) an amine with (B) a di- and/or polyhalohydrin ether of a di- or polyalcohol, at least one of (A) and (B) being at least partially substituted with a lipophilic radical of 8 to 22 carbon atoms.

3,639,297

FOAMED PLASTICS FROM VINYL POLYMER DISPERSIONS AND PROCESS FOR THEIR MANUFACTURE

Robert Steffen, Arno Crombach, and Hermann Lossen, Burgkirchen (Alz), and Johann Bieringer, Bruck (Alz), Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Feb. 1, 1968, Ser. No. 702,177
Claims priority, application Germany, Feb. 10, 1967, F 51,482
Int. Cl. C08f 29/18, 47/08
U.S. Cl. 260—2.5 L 17 Claims

The present invention provides a process for the manufacture of foamed plastics from vinyl polymer dispersions, particularly vinyl chloride homo- or copolymer dispersions. According to the invention it is essential to add to the polymer dispersions a substance containing a plurality of hydroxyl groups such as glycerol, a substance to produce a stable foam and a heat stabilizer common for vinyl polymers. The foamed polymer may be covered with sheets or films of polyvinyl chloride or other material.

3,639,298

FLAME RESISTANT LATEX COMPOSITIONS, ARTICLES MADE THEREFROM AND PROCESSES FOR PRODUCING SAME

Fred Lister and Ludwig A. Wax, Dover, Del., assignors to Standard Brands Chemical Industries, Inc., Dover, Del.

No Drawing. Filed Feb. 29, 1968, Ser. No. 709,208
Int. Cl. C08j 1/18
U.S. Cl. 260—2.5 FP 28 Claims

A flame retardant composition suitable for preparation of films, foams, adhesives, coatings and the like comprising a rubbery latex of a copolymer prepared from a monomeric mixture of an aliphatic conjugated diene, a halogen-containing aliphatic ethylenically unsaturated monomer and a copolymerizable monomer containing carboxyl groups admixed or compounded with certain weight proportions of a flame retardant additive of a hydrated alumina. Preferably, one or more curing agents are also compounded with the latex.

3,639,299

NOVEL FLAME RETARDANT COMPOSITIONS AND METHOD OF APPLYING

Kenneth R. MacDowall, Manhattan Beach, Calif., assignor to North American Rockwell Corporation

No Drawing. Filed Mar. 5, 1968, Ser. No. 710,649
Int. Cl. B01j 13/02; C08j 1/14
U.S. Cl. 260—2.5 FP 8 Claims

A flame retardant composition wherein said composition comprises an essentially flame resistant binder having intimately and homogeneously proportioned therein at least two inorganic flame retardants; at least one organic flame retardant; at least one non-resinous carbonific agent; at least one organic, nitrogenous intumescent adjutant; at least one spumific agent and a neutralizing and halogen absorbing reagent and wherein said ingredients are interdependent and coacting to produce the desired flame resistant composition of matter.

3,639,300

SPONGE RUBBER SOLE FOR PREVENTING SLIPPAGE

Akira Takahashi, Ibaragi-ken, and Gentaro Nemoto, Otaku, Japan, assignors to Showa Rubber Co., Ltd., Tokyo, Japan

No Drawing. Filed Mar. 27, 1968, Ser. No. 716,308
Claims priority, application Japan, Aug. 22, 1967, 42/53,907
Int. Cl. A43b 13/22; C08c 17/08; C08d 13/08
U.S. Cl. 260—2.5 R 1 Claim

The present invention relates to a sponge rubber sole containing a slippage preventive additive. The rubber sole contains, for each 100 parts of rubber, 30 parts or less (5 to 30 parts, preferably 10 to 30 parts) of silicon carbide of 95 to 98% SiC content. Silicon carbide is of 100–300 mesh which is of about the same grain size as the reinforcing filler usually used in rubber and can thus be uniformly mixed with the reinforcing filler.

3,639,301

HEAT-AGED NEOPRENE LATEX

Mortimer A. Youker, Clearwater, Fla., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 571,992, Aug. 12, 1966, which is a continuation-in-part of application Ser. No. 468,554, June 30, 1965. This application Apr. 30, 1968, Ser. No. 725,520
The portion of the term of the patent subsequent to June 17, 1986, has been disclaimed
Int. Cl. C08d 5/00, 13/08, 3/14
U.S. Cl. 260—2.5 L 6 Claims

An improved polychloroprene latex, useful for making polyisocyanate-modified foams, comprises the product produced by heating a freshly prepared polychloroprene latex, having a pH higher than 11, at a temperature in the range of 60 to 90° C. until the pH is lowered to the range of 9.5 to 10. In a preferred embodiment the heating is carried out on a latex containing about 50% solids and the latex is subsequently creamed to about 60% solids.

3,639,302

FLAME-RETARDANT RESIN COMPOSITIONS

Joseph Patrick Brown, Geufron, Llangollen, and William Rees Foster, Croesyceiliog, Cwmbran, England, assignors to Monsanto Chemicals Limited, London, England

No Drawing. Filed May 16, 1968, Ser. No. 729,523
Int. Cl. C08j 1/18
U.S. Cl. 260—2.5 FP 5 Claims

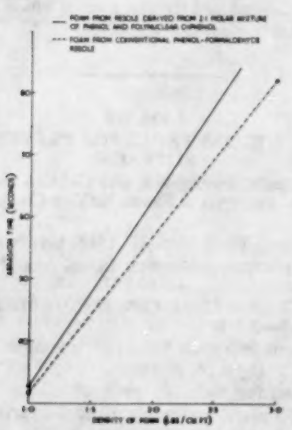
Bis(ar-halo-ar-alkenyloxyphenyl) compounds wherein the aromatic rings are linked by a covalent bond, a sulfur or oxygen atom, a secondary or tertiary amino group, or a divalent aliphatic group; processes for preparing such compounds by reacting an alkenyl halide with an appropriate bis(ar-halo-ar-hydroxyphenyl) compound or with a salt thereof; and the use of such compounds as flame-retardant agents for normally flammable synthetic resins, especially foamed synthetic resins.

3,639,303

PHENOLIC FOAMS

John Penfold, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed June 10, 1968, Ser. No. 735,777
Claims priority, application Great Britain, June 15, 1967, 27,734/67; May 27, 1968, 25,158/68
Int. Cl. C08f 47/08; C08j 1/14
U.S. Cl. 260—2.5 F 15 Claims


FOAM FROM RESOLE DERIVED FROM 2:1 MOLAR MIXTURE OF PHENOL AND POLYNUCLEAR DIPHENOL
FOAM FROM CONVENTIONAL PHENOL-FORMALDEHYDE RESOLE
REACTION TIME (SECONDS)
DENSITY OF FOAM (LBS./CU FT.)

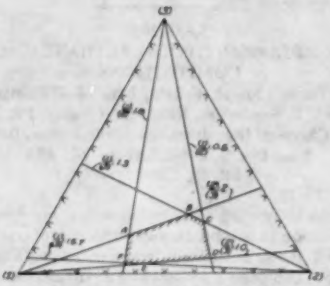
The invention relates to the reaction product of formaldehyde and a mononuclear phenol with a polynuclear diphenol to produce a foam.

3,639,304

SELF-EXTINGUISHING POLYETHYLENE FOAMS COMPRISING AN ANTIMONY COMPOUND, A HALOGEN-CONTAINING ALIPHATIC OR CYCLO-ALIPHATIC COMPOUND AND A BROMINE-CONTAINING AROMATIC OR ACYCLIC COMPOUND

Charles F. Raley, Jr., Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of abandoned application Ser. No. 606,577, Jan. 3, 1967. This application June 27, 1968, Ser. No. 740,622
Int. Cl. C09k 3/28; C08f 3/04; B29d 27/00
U.S. Cl. 260—2.5 FP 10 Claims



A flame retardant or self-extinguishing foamed polyethylene useful as insulation is described. This new composition contains a ternary mixture of flame-retardant agents containing certain amounts of (1) an antimony compound, (2) a halogen-containing aliphatic or cycloaliphatic compound having certain specificities, and (3) a bromine-containing aromatic or acyclic compound of a particular class.

3,639,305

FLAME-RETARDANT RESIN COMPOSITIONS AND METHOD OF MAKING SAME

William Rees Foster, Croesyceiliog, Cwmbran, England, and Joseph Patrick Brown, Geufron, Llangollen, Wales, assignors to Monsanto Chemicals Limited, London, England

No Drawing. Filed July 18, 1968, Ser. No. 745,681
Claims priority, application Great Britain, Aug. 8, 1967, 36,413/67
Int. Cl. C08j 1/18, 1/26
U.S. Cl. 260—2.5 FP 10 Claims

ar-Halo ar-alkenyloxy aromatic acids and derivatives thereof, such as the ester, salt, halide, and anhydride derivatives; processes for preparing such compounds by reacting an alkenyl halide with an appropriate ar-halo-ar-hydroxy aromatic acid or derivative thereof; and the use of such compounds as flame-retardant agents for normally flammable synthetic resins, especially foamed synthetic resins.

3,639,306

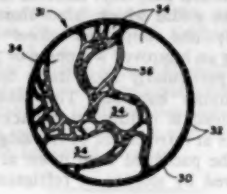
ENCAPSULATING PARTICLES AND PROCESS FOR MAKING SAME

Shmuel Sternberg, Hyde Park, and Harris J. Bixler and Alan S. Michaels, Lexington, Mass., assignors to Amicon Corporation, Lexington, Mass.

Filed Aug. 8, 1968, Ser. No. 751,251
Int. Cl. B01j 13/02; C08j 1/28
U.S. Cl. 260—2.5 B 20 Claims

Anisotropic polymer particles comprising a thin skin which forms either a microporous or diffusive barrier layer and a substantially hollow interior which interior,

however, comprises sufficient macroporous polymer support structure to substantially enhance the physical strength, particularly the resistance to compression, of the particles. These particles have excellent utility for encapsulating various materials for controlled release



therefrom, for immobilizing some chemical reactants while allowing free access and egress of other reactants or reaction products from the particle, and for effecting separations based on diffusion of different-size molecules therethrough. The versatile process by which these particles are formed is also a subject of the instant invention.

3,639,307
URETHANE FOAMS WITH REDUCED SMOKE LEVELS
Herman P. Doerge, Verona, and Marco Wismer, Gibsonia, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
No Drawing. Filed Nov. 3, 1969, Ser. No. 873,638
Int. Cl. C08g *22/44, 51/58*
U.S. Cl. 260—2.5 AJ **20 Claims**

This invention relates to fire retardant polyurethane foams having reduced smoke levels. The invention comprises incorporating fumaric acid into a fire-retardant foam formulation.

3,639,308
TUBELESS TIRE INNER LINER COMPOSITION COMPRISING NATURAL RUBBER, BUTYL RUBBER AND MEDIUM THERMAL BLACK
Barry Topcik, Somerville, N.J., assignor to Cities Service Company, New York, N.Y.
No Drawing. Filed Oct. 8, 1969, Ser. No. 864,888
Int. Cl. C08c *9/10, 9/04*
U.S. Cl. 260—5 **12 Claims**

Compositions for use as an inner liner in pneumatic vehicle tires to reduce the rate at which air escapes from a tire by permeating through the body thereof, comprising from about 50 to about 90 parts by weight of natural rubber, from about 10 to about 50 parts by weight of butyl rubber and from about 40 to about 120 parts by weight of carbon black. At least about 40 parts by weight of the carbon black has a surface area below about 20 $m.^2/gm.$ and a dibutylphthalate absorption below about 50.

3,639,309
SPRAY STARCH CONTAINING WATER-SOLUBLE POLYURETHANE
Jesse H. Starkman, Deerfield, and William J. Brown, Chicago, Ill., assignors to Starkman Associates, Inc., Deerfield, Ill.
No Drawing. Filed Mar. 19, 1969, Ser. No. 808,686
Int. Cl. C08g *41/04*
U.S. Cl. 260—9 **5 Claims**

An improved spray starch formulation is prepared by incorporating at least about 30% of a film-forming, water-soluble polyurethane, based on the weight of the dry starch. At this level, the polyurethane addition produces increased ironing ease, improved scorch resistance, and improved soil release properties.

3,639,310
WAX-RESIN-HYDROXYPROPYL CELLULOSE THERMOFLUID VEHICLES
Ray Andrews, Washington, Pa., assignor to Hercules Incorporated, Wilmington, Del.
No Drawing. Filed Feb. 16, 1970, Ser. No. 11,845
Int. Cl. C03c *1/00*
U.S. Cl. 260—17 R **2 Claims**

Thermofluid vehicles of the wax-resin type for vitreous enamel color compositions are described. The vehicles contain a fatty alcohol or fatty amide wax, a resin binder and a small amount of hydroxypropyl cellulose and give, with enamel colors, compositions which do not run or sag during firing and which produce enamel coatings free of stencil markings.

3,639,311
METHYL METHACRYLATE-NITROCELLULOSE ADHESIVE COMPOSITION
Harold O. Buzzell, Wollaston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
No Drawing. Filed Jan. 11, 1968, Ser. No. 697,019
Int. Cl. C08f *29/46;* **C09j** *3/16*
U.S. Cl. 260—17 **2 Claims**

Many of the physical problems encountered in the production of an optically perfect lamination between polymethyl methacrylate and cellulose acetate butyrate may be obviated by utilizing an adhesive comprising approximately 95% methyl methacrylate monomer, approximately 4% nitrocellulose having a viscosity within the range of 600 to 1000 $seconds^{-1}$ and about 1% of an initiator for the monomer.

3,639,312
OLEFIN POLYMERS CONTAINING SUGARS
Robert B. Turner, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Feb. 25, 1969, Ser. No. 802,233
Int. Cl. C08f *45/67, 29/10;* **C08b** *29/30*
U.S. Cl. 260—17.4 SG **9 Claims**

Fabricated articles of olefin polymers having improved optical properties are prepared by incorporating a small amount of a sugar such as sucrose into an olefin polymer such as polyethylene prior to fabricating an article from the polymer.

3,639,313
MODIFIED POLYAMIDE RESINS
Arnold H. Gruben, Cedar Grove, and Daniel J. Carlick, Berkeley Heights, N.J., assignors to Sun Chemical Corporation, New York, N.Y.
No Drawing. Filed Nov. 26, 1969, Ser. No. 880,435
Int. Cl. C08g *20/20*
U.S. Cl. 260—18 N **9 Claims**

A modified polyamide resin particularly suitable for use in printing inks and laminating inks comprises a polyamide resin which is the reaction product of at least one polymeric fatty acid and at least one diamine or polyamine and up to about 40 weight percent of a cyclic lactam, such as e-caprolactam.

3,639,314
PROCESS FOR THE PREPARATION OF HIGH-VISCOSITY ALKYD RESINS
Martin Cherubim, Rheinkamp-Eick-West, and Friedrich Henn, Homberg (Lower Rhine), Germany, assignors to Rheinpreussen Aktiengesellschaft fuer Bergbau und Chemie, Homberg (Lower Rhine), Germany
No Drawing. Continuation of application Ser. No. 750,746, Aug. 7, 1968. This application Apr. 28, 1970, Ser. No. 31,819
Claims priority, application Germany, Aug. 9, 1967, R 46,680
Int. Cl. C09d *3/64*
U.S. Cl. 260—22 EP **15 Claims**

Process for the preparation of alkyd resins of high viscosity, characterized in that 100 weight parts of alkyd

resin are mixed with 0.1 to 10 weight parts of a nitrogen-containing glycidyl compound which contains at least two glycidyl groups bonded to amine nitrogen, and the mixture is condensed at temperatures between 20° C. and 200° C. to the desired viscosity.

3,639,315

PROCESS FOR MODIFYING HYDROXYL-CONTAINING ALKYDS AND POLYESTERS IN WATER DISPERSION

Jaime Rodriguez, Minneapolis, Minn., assignor to Ashland Oil, Inc., Ashland, Ky.

No Drawing. Filed Feb. 13, 1968, Ser. No. 705,019

Int. Cl. C08g *22/06;* **C09d** *3/72*

U.S. Cl. 260—22 TN **3 Claims**

Process and products formed by reacting hydroxyl-containing, water-dispersible resins such as alkyds and polyesters with organic isocyanate in water dispersions by the addition with agitation of 0.1 to 20.0% of an organic isocyanate to the dispersed resin over a period of about 5 to 180 minutes at a temperature of 60° to 200° F. The products are water-dispersible coating resins capable of air drying in a short time.

3,639,316

COMPOSITION FOR REDUCING FRICTION ON COATED ABRASIVE CLOTH

Thomas J. Argiro, 1454 Fairview Place, Alliance, Ohio 44601

Original application Mar. 16, 1966, Ser. No. 534,783, now Patent No. 3,413,106, dated Nov. 26, 1968. Divided and this application June 13, 1968, Ser. No. 750,667

Int. Cl. C08g *17/16;* **C08j** *3/16, 3/26*

U.S. Cl. 260—22 R **5 Claims**

A composition adapted for application to the back of coated abrasive cloth to provide a friction reducing back coat thereon comprises an organic solvent solution of a wax lubricant and a curable soluble alkyd resin binder, in a weight ratio of binder to lubricant in the range of about 2:1 to 10:1. The lubricant preferably includes a major proportion of a paraffin base wax and a minor proportion of carnauba wax. The composition is applied to the cloth, solvent is evaporated, and the resin is cured to provide the back coat.

3,639,317

SURFACE TREATMENT COMPOSITION AND METHOD

Duane W. Gagle and Richard J. Bennett, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Mar. 28, 1968, Ser. No. 717,042

Int. Cl. C08f *29/02;* **E01c** *11/24*

U.S. Cl. 260—23 H **11 Claims**

A concrete or other porous surface anti-spalling, water repellent, surface treatment composition, e.g., amorphous polypropylene, as can be obtained in the production of crystalline polypropylene, linseed oil and Stoddard solvent which can be brush-applied to the surface will impart to the surface anti-slip or ice-rejecting properties relative to untreated surface areas, with inhibit frost penetration, and is stable against oils, salts and high and low pH solutions.

3,639,318

PLASTICIZED POLYVINYL CHLORIDE FILM

Donatas Tijunelis and Edward A. Shiner, Chicago, Ill., assignors to Union Carbide Corporation

Filed May 29, 1968, Ser. No. 733,086

Int. Cl. C08f *45/28;* **B65b** *25/22*

U.S. Cl. 260—23 XA **15 Claims**

A highly plasticized polyvinyl chloride film is biaxially oriented to obtain a film which, after shrinking, exhibits residual elasticity and improved stress characteristics thereby providing an improved wrapping or packaging film for food items, particularly food items that are subject to frequent customer handling. The biaxially oriented plastic film obtained is utilized as a packaging film for storing food items at refrigerator or freezing temperatures, or for cooking the packaged food items at elevated temperatures, followed by storage at refrigerator or freezer temperatures.

3,639,319

PELLUCID HALOGEN-CONTAINING RESIN COMPOSITIONS

Kenneth C. Bergman, Cleveland Heights, and Thomas C. Jennings, Willowick, Ohio, assignors to Synthetic Products Company, Cleveland, Ohio

No Drawing. Filed July 14, 1969, Ser. No. 841,542

Int. Cl. C08f *45/62*

U.S. Cl. 260—23 **7 Claims**

Pellucid halogen-containing resin compositions containing a vinyl halide resin such as polyvinyl chloride and, as pellucid metallic stabilizers, a combination of stannous and zinc salts of organic acids dispersed in the resin. These plastic compositions can be processed or molded under the action of heat into films, sheets and solid objects such as bottles without deterioration of the vinyl halide resin to provide colorless, transparent plastic articles.

3,639,320

WAX COMPOSITIONS

Alphonse Faure, Claude Gigou, and Robert Mingat, Rhone, and Michel Ruaud, Isere, France, assignors to Rhone-Poulenc S.A., Paris, France

Filed Mar. 18, 1968, Ser. No. 713,583

Claims priority, application France, Mar. 30, 1967, 100,863

Int. Cl. C08c *11/70;* **C08f** *45/52*

U.S. Cl. 260—28.5 **6 Claims**

The invention provides novel wax compositions suitable as hot melt adhesives comprising a minor proportion of a terpolymer of ethylene, vinyl acetate, and a vinyl ester of a higher carboxylic acid and a major proportion of microcrystalline or paraffin wax.

3,639,321

POLYESTER MOULDING AND COATING MATERIALS WHICH CAN BE HARDENED BY UV-IRRADIATION

Karl Fuhr, Krefeld, Hans Rudolph, Krefeld-Bockum, and Hermann Schnell and Manfred Patheiger, Krefeld-Uerdingen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 23, 1968, Ser. No. 723,621

Claims priority, application Germany, May 6, 1967, F 52,340; Mar. 9, 1968, F 55,020

Int. Cl. C08f *45/52*

U.S. Cl. 260—28.5 **8 Claims**

Compositions which can be hardened by ultraviolet irradiation and have improved dark storability comprising an unsaturated polyester of an α,β-unsaturated dicarboxylicacid and a polyol, a copolymerizable monomeric compound and, as photosensitizer, a benzoin ether of a secondary alcohol.

3,639,322

METHOD OF TREATING ASPHALTENES PRIOR TO HIGH TEMPERATURE PROCESSING WITH VARIOUS HIGH POLYMERS

Robert J. Bathgate, Media, Pa., and Jackson S. Boyer, Claymont, Del., assignors to Sun Oil Company, Philadelphia, Pa.

No Drawing. Filed June 13, 1968, Ser. No. 736,578
Int. Cl. C08f *45/52*; C08g *51/52*
U.S. Cl. 260—28.5 A 5 Claims

A process for forming improved asphaltene-high molecular weight thermoplastic polymer products wherein the asphaltene prior to incorporation into the polymer is subjected to a heating treatment, and further the products formed by the improved process.

3,639,323

PREBLENDING OF ETHYLENE-PROPYLENE RUBBER AND WAX FOR INCORPORATION IN HIGHLY UNSATURATED RUBBER

Gerrard Morrisey, Watertown, Conn., assignor to Uniroyal, Inc., New York, N.Y.

No Drawing. Filed July 17, 1969, Ser. No. 842,686
Int. Cl. C08c *11/70*
U.S. Cl. 260—28.5 B 6 Claims

The incorporation of ethylene-propylene rubber (EPM or EPDM) and wax into highly unsaturated rubber (e.g., NR, SBR) is accomplished more readily if the ethylene-propylene rubber and wax are first preblended before mixing into the highly unsaturated rubber. Use of the ethylene-propylene rubber and wax in the form of a preblend also results in improved distribution of these additives in the highly unsaturated rubber, and improved ozone resistance in the total blend.

3,639,324

COATING COMPOSITION OF COPOLYMERIC VINYLIDENE CHLORIDE, PROCESS OF PREPARATION THEREOF, AND ARTICLES COATED THEREWITH

Daniel Kenyon Owens, Bon Air, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 13, 1969, Ser. No. 865,982
Int. Cl. C08f *45/24*, *45/52*
U.S. Cl. 260—28.5 D 11 Claims

A coating composition is provided comprising behenic acid and a copolymer of vinylidene chloride wherein the copolymer is of between about 60 parts and about 95 parts by weight of vinylidene chloride and includes a non-ionic surfactant said composition being especially adapted for coating film structures of organic thermoplastic polymeric material. A process for preparing said compositions characterized by continuous addition of monomeric materials into an aqueous dispersion containing a reduction-oxidation initiator, a non-ionic surfactant and behenic acid also is provided.

3,639,325

POLYVINYL ACETATE LATEX WHITE PAINT BASE COMPOSITIONS CONTAINING A DISPERSANT FOR PAINT TINT COLORANTS

Donald L. Marion, Homewood, Dennis G. Anderson, Chicago, and Robert C. Strand, Homewood, Ill., assignors to Atlantic Richfield Company

No Drawing. Filed Mar. 15, 1968, Ser. No. 713,291
Int. Cl. C08f *3/70*, *29/48*; C09d *3/76*
U.S. Cl. 260—29.6 4 Claims

Improved color development and a wide range of paint tint colorant compatibility is achieved in polyvinyl acetate latex white paint base compositions containing a white pigment and a dispersing agent, by the addition thereto of a small amount effective as a colorant dispersant, of an ammonium salt of a partial ester of a styrene-maleic anhydride polymer esterified to about 75 to 100% half ester with an alkylphenyl ether alcohol of the formula

$$R—C_6H_4—(OCH_2CH_2)_x—OH$$

where R is alkyl of 8 to 9 carbon atoms and x is 1 to 30, such as p-tertiary octylphenyl polyethoxy alcohol of 9 to 10 ethoxy groups, the styrene-maleic anhydride polymer prior to esterification containing a molar ratio of polymerized styrene to polymerized maleic anhydride of about 1:1 to 4:1, and preferably of about 1:1, and having an average molecular weight of about 600 to 5000, preferably about 1500 to 2000. Optimum color development is obtained when the dispersing agent comprises a small effective amount of an ammonium salt of a partial ester of the aforesaid styrene-maleic anhydride polymer esterified to about 75 to 100% half ester with an alkyl ether of ethylene glycol or of diethylene glycol, such as the monobutyl ether of ethylene glycol. This dispersing agent and the colorant dispersant can be mixed together to form an effective colorant tint paint dispersant composition for addition to polyvinyl acetate latex white paint base compositions. The paint tint colorant is subsequently added to the polyvinyl acetate latex white paint base composition containing the colorant dispersant resulting in excellent compatibility and color development.

3,639,326

VINYL TERPOLYMER COMPOSITIONS

Raymond J. Kray, Berkeley Heights, Marvin T. Tetenbaum, Convent Station, Wilbert M. Wenner, Rockaway, and Oliver A. Barton, Florham Park, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed May 20, 1968, Ser. No. 730,644
Int. Cl. C08f *45/00*
U.S. Cl. 260—29.6 5 Claims

Latices prepared by the emulsion copolymerization of vinyl chloride, ethylene and a third ethylenically unsaturated carboxylic ester monomer afford films having a combination of desirable properties. Additionally, such latices can be formulated into paints which are fire and mildew resistant.

3,639,327

ADHESIVE COMPOSITION

Arthur H. Drelich, Plainfield, and Patricia M. Condon, East Brunswick, N.J., assignors to Johnson & Johnson

Filed May 27, 1968, Ser. No. 732,454
Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 NR 7 Claims

An adhesive system having improved adhesive strength and derived from a colloidal dispersion of a latex adhesive and a cationic material.

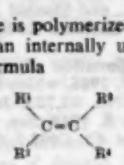
3,639,328

POLYMERS OF TETRAFLUOROETHYLENE

John Michael Downer, Harpenden, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed July 1, 1968, Ser. No. 741,240
Claims priority, application Great Britain, July 5, 1967, 30,990/67
Int. Cl. C08f *3/24*, *45/22*
U.S. Cl. 260—29.6 3 Claims

Tetrafluoroethylene is polymerized in aqueous medium in the presence of an internally unsaturated perfluoroalkene having the formula



in which R^1 and R^3 are perfluoroalkyl and R^2 and R^4 are fluorine or perfluoroalkyl in the presence of a water

soluble organic peroxide as initiator and in the presence of a highly fluorinated aliphatic carboxylic or sulfonic acid salt as emulsifier.

3,639,329

BENZENE POLYCARBOXYLIC ACID ESTERS

Morice William Thompson, Maidenhead, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed May 27, 1968, Ser. No. 732,028
Claims priority, application Great Britain, May 30, 1967, 24,926/67
Int. Cl. C08f 45/42
U.S. Cl. 260—31.4 7 Claims

New esters of structure

prepared by esterification of benzene polycarboxylic acids are mixed in coating compositions as plasticizers having particularly low volatility and resistance to water spotting.

3,639,330

METAL COATING COMPOSITIONS AND METAL COATED THEREWITH

Andrew F. Fitzhugh and Rodney M. Huck, Longmeadow, Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 3, 1969, Ser. No. 864,304
Int. Cl. C08c 1/36; C08f 45/42; C08g 51/42
U.S. Cl. 260—31.4 9 Claims

Enamels suitable for use in coating metal or enamelled surfaces to impart not only electrical insulation thereto, but also the capacity to thermally bond to other surfaces. Coatings so bonded display unusually high rupture strength at elevated temperatures. The enamels use a mixture of (1) a condensate of amine-modified novolac resin and (2) a polyvinyl acetal.

3,639,331

GLASS FIBER REINFORCED RESINS CONTAINING DISPERSION AID

Kiyoshi Hattori and Elby Leon Richardson, Evansville, Ind., assignors to Dart Industries Inc., Los Angeles, Calif.

No Drawing. Filed Mar. 25, 1968, Ser. No. 715,574
Int. Cl. C08f 45/10
U.S. Cl. 260—31.8 20 Claims

Novel glass fiber reinforced thermoplastics having better dispersion of the glass fibers therein and process consisting of incorporation of an additive such as a lubricant, plasticizer or low molecular weight resin to reduce the melt viscosity of the resin surrounding the glass fiber relative to the viscosity of the unreinforced resin at the melt temperature.

3,639,332

CRYSTALLINE POLYSTYRENE COMPOSITIONS

Harry W. Coover, Jr., and Donald J. Shields, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation of application Ser. No. 595,564, Nov. 16, 1966, which is a continuation of application Ser. No. 41,723, July 11, 1960. This application Aug. 5, 1968, Ser. No. 751,693
Int. Cl. C08f 7/04
U.S. Cl. 260—33.8 3 Claims

Oriented crystalline polystyrene having heat distortion temperatures of at least 200° C. which will not disorient at high temperatures, for example, 100–200° C. The oriented crystalline polystyrene of the invention is eminently suitable for use as a photographic support. The crystalline polystyrene of the invention can be obtained by polymerizing styrene at a temperature within the range of about 20 to about 130° C. and a pressure within the range of about 0 to 1000 p.s.i. in the presence of an ionic catalyst comprising (1) a halide of a transition metal from Groups IV–B and VI–B of the Periodic Table and (2) and aluminum alkyl. As an embodiment of the invention it has been found that one of the particular catalyst combinations provides a methylene chloride-soluble crystalline isotactic styrene polymer which permits the preparation of valuable polystyrene fibers from the ordinary dry-spinning equipment commonly used by fiber manufacturers.

3,639,333

ALIPHATIC AMIDES AS LIGHT STABILIZERS FOR PIGMENTED POLYMERS

William Frederick Baitinger, Jr., Belle Mead, N.J., assignor to American Cyanamid Company, Stamford, Conn.

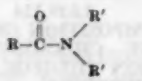
No Drawing. Filed Aug. 17, 1965, Ser. No. 480,468
Int. Cl. C08f 45/04, 45/60
U.S. Cl. 260—41 B 8 Claims

A polymeric composition comprising:

(1) a polymer selected from the class consisting of poly(vinyl chloride), polystyrene and polyolefins having 2–4 carbon atoms and

(2) at least 0.5% of titanium dioxide based on the weight of the polymer and

(3) an amide of the formula:



wherein R is alkyl (C_1–C_{18}, alkenyl (C_2–C_{18}), carboxyalkyl (C_1–C_{18}), carb(lower alkoxy)alkyl (C_1–C_{18}),

$$(R')_2N—(CH_2)_n,\ (R')_2NCO(CH_2)_n$$

or $R'CON(R')CH_2—(CH_2)_n$; R' is hydrogen, alkyl (C_1–C_{18}), hydroxy(lower alkyl), lower alkoxy(lower alkyl) or cyano(lower alkyl); and *n* is zero to eighteen inclusive, said amide being present in a concentration of 0.1–10.0% of the weight of the polymer. These compositions have improved light stability and can be formed into shaped articles as for example by molding, extrusion, or spinning.

3,639,334

STABILIZATION OF POLYPHENYLENE ETHERS

Klaus E. Holoch, Psald, Germany, assignor to General Electric Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 425,330, Jan. 13, 1965. This application May 14, 1968, Ser. No. 728,914
Int. Cl. C08g 51/58, 51/60
U.S. Cl. 260—45.9 15 Claims

A polyphenylene ether composition stable to oxygen containing atmosphere at elevated temperatures comprising a polyphenylene ether and a stabilizing quantity of a material selected from the group consisting of phosphites, hydrazines, and mixtures thereof.

3,639,335
THERMALLY-STABLE POLYAMIDE COMPOSITIONS
Shigeru Fujii and Iso Saito, Nagoya, Japan, assignors to Toray Industries, Inc., Tokyo, Japan
No Drawing. Filed June 12, 1970, Ser. No. 45,897
Int. Cl. C08g 51/58, 51/62
U.S. Cl. 260—45.75 C 19 Claims

Nylon compositions which are formed from polyamides such as polycaprolactam have improved heat and light stability by incorporating a copper salt derived from the reaction of a coper halide and xylenediamine. The resulting polyamides which are color-free may optionally contain a hindered phenol antioxidant.

3,639,336
HEXAHYDRO-1,3,5-TRIS-(4-HYDROXYARYL)-s-TRIAZINES
Warren L. Beears, Brecksville, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
No Drawing. Original application Oct. 31, 1968, Ser. No. 772,363, now Patent No. 3,567,724, dated Mar. 2, 1971. Divided and this application Mar. 18, 1970, Ser. No. 14,860
Int. Cl. C08f 45/60; C08g 51/60; C10m 1/36
U.S. Cl. 260—45.8 N 13 Claims

Novel hexahydro-1,3,5-tris-(4-hydroxyaryl)-s-triazines have been prepared. These compounds are effective stabilizers for organic materials, such as α-olefin polymers and copolymers, acetal polymers, polyamides, polyesters and polyurethanes, against the deleterious effects of oxygen, heat and light.

3,639,337
COPOLYMERS OF POLY(2,6-DIPHENYL-1,4-PHENYLENE OXIDE)
Johann F. Klebe, Schenectady, N.Y., assignor to General Electric Company
No Drawing. Filed Nov. 30, 1970, Ser. No. 93,811
Int. Cl. C08g 23/20
U.S. Cl. 260—47 ET 10 Claims

Poly(2,6-diphenyl-1,4-phenylene oxide) is converted to a copolymer by metalating the meta position of some of the phenylene rings which, through a series of reactions, leads to introduction of a quinoid substituent in the meta position or to ring closure with conversion of the phenylene unit to a fluorene or fluorenone unit. Because of the completely aromatic nature of the copolymer it is very oxidation resistant. The introduction of these new repeating units along the chain of the initial polymer introduces an irregularity so that the polycrystalline nature of the initial polymer is destroyed resulting in a copolymer which is readily moldable without necessity for rapid cooling to prevent embrittlement.

3,639,338
REACTIVE POLYUREAS, PROCESS OF PREPARING SAME, AND USE THEREOF IN CURING EPOXY RESINS
Robert C. Kuder, Excelsior, Minn., assignor to General Mills, Inc.
No Drawing. Filed May 6, 1968, Ser. No. 727,031
Int. Cl. C08g 30/14
U.S. Cl. 260—47 EN 21 Claims

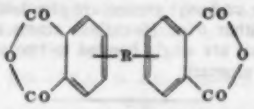
Reactive polyureas prepared from diprimary diamines containing at least one secondary amine group and diisocyanates derived from C_{36} to C_{44} dimerized fat acids. Process of preparing said polyureas using chlorofrm or trichloroethylene as reaction solvent. Use of the polyureas to cure epoxy resins.

3,639,339
REACTIVE POLYMERS AND PROCESS FOR THE PRODUCTION THEREOF
John Beaton and Douglas C. Edwards, Sarnia, Ontario, and Richard Helmut Wunder, Corunna, Ontario, Canada, assignors to Polymer Corporation Limited, Sarnia, Ontario, Canada
No Drawing. Filed May 20, 1968, Ser. No. 730,662
Claims priority, application Canada, June 28, 1967, 944,149
Int. Cl. C08d 5/02; C08f 27/02, 27/08
U.S. Cl. 260—47 1 Claim

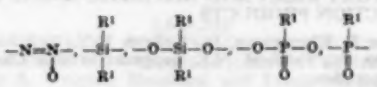
A starting polymer of an olefinically-unsaturated compound and containing more than one halogen per polymeric molecule, particularly as an allylic halogen group, is treated with a multifunctional agent to form a polymer which is then curable with isocyanate. The multifunctional agent has as a first functional group a tertiary amine or a hydrocarbyl oxide of an alkali metal or mercaptide of an alkali metal; the agent has at least one other functional group which is less active than the first group and has a labile hydrogen atom capable of reacting with isocyanate.

3,639,340
THERMOSTABLE POLYMERS OBTAINED FROM PHENOLS AND AROMATIC TETRACARBOXYLIC ACID ANHYDRIDES
Maurice Balme and Maurice Ducloux, Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France
No Drawing. Filed July 8, 1968, Ser. No. 743,009
Claims priority, application France, July 13, 1967, 114,382
Int. Cl. C08b 33/10
U.S. Cl. 260—47 CP 9 Claims

Novel thermostable polymers are made by polycondensing a phenol or polyphenol with a dianhydride of formula:



or a corresponding tetracid, in which R represents a simple valence bond or one of the following divalent radicals: —O—, —S—, —SO_2—, —NH—, —NR′—, —N=N—,



—CHOH—, —CO—, —$C(CH_3)_2$—,

—CO—C_6H_4—CO—

and —CHOH—C_6H_4—CHOH—, R^1 representing a lower alkyl, cycloalkyl or aryl radical.

3,639,341
LINEAR POLYURETHANE RESIN
Heinrich Krimm, Krefeld-Bochum, Hermann Schnell, Krefeld-Uerdingen, and Günther Lenz, Krefeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed July 30, 1968, Ser. No. 748,634
Claims priority, application Germany, Aug. 3, 1967, F 53,136
Int. Cl. C08g 22/26
U.S. Cl. 260—47 CZ 5 Claims

Linear high molecular weight polyurethanes are prepared by polycondensation of binuclear N-alkylsubstituted hydroxy amines in which the hydroxyl group and the amino groups are aromatically bound in form of their monocarbonic acid derivatives or with bifunctional carbonic acid derivatives if desired in the presence of a catalyst.

3,639,342

METHOD FOR PREPARING HETEROCYCLIC POLYMER FROM DIAMINO-DIAMIDO COMPOUNDS AND POLYCARBOXYLIC ACID DERIVATIVES

Yasuo Miyadera, Tatuo Masuko, Tadashi Muroi, Shinichi Okada, and Hiroshi Noguchi, Hitachi-shi, Japan, assignors to Hitachi, Ltd., Hitachi Chemical Company, Ltd., and Hitachi Cable, Ltd., Tokyo, Japan

No Drawing. Filed Aug. 2, 1968, Ser. No. 749,581

Int. Cl. C08g *33/02*

U.S. Cl. 260—47 CP 22 Claims

A solid heterocyclic polymer capable of forming cast film and fiber, especially useful for heat-stable insulating wire, having a novel aromatic nucleus-fused bis(4-thia-1,3-diazine oxide), bis(1,3-diazine oxide) ring or combination thereof in its repeated unit. The polymer is produced by reacting aromatic O-diamino-diamido compounds with aromatic or aliphatic polybasic acid anhydrides or halides to form a new polyamide, and cyclizing under dehydration the polyamide.

3,639,343

POLYIMIDES AND COPOLYIMIDES FROM AROMATIC DIAMINES AND ALICYCLIC DIANHYDRIDES

George Chung-Chi Su, Devon, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Feb. 11, 1969, Ser. No. 798,436

Int. Cl. C08g *20/32*

U.S. Cl. 260—47 7 Claims

Polyimides and copolyimides in which the radicals to which the four carbonyl groups are attached are alicyclic and contain either 6 or 10 carbon atoms and in which the radicals that are singly bonded to two separate nitrogen atoms are aromatic.

3,639,344

COATING COMPOSITIONS COMPRISING AN EPOXY RESIN AND ALIPHATIC AMINE REACTION PRODUCTS

William P. Kinneman, Jr., Suffern, N.Y., and John R. Uram, Jr., Fairfield, N.J., assignors to Sika Chemical Corporation

No Drawing. Filed Aug. 21, 1969, Ser. No. 852,109

Int. Cl. C08g *30/14*

U.S. Cl. 260—47 EN 9 Claims

This invention relates to a coating composition suitable for coating or painting wet or damp substrates which is capable of curing to a hard film under water comprising an epoxy resin and a substantially water-insensitive curing agent for said resin comprising a reaction product of a polyamine and a monofunctional epoxide-containing material.

3,639,345

SHELF-STABLE EPOXY RESIN COMPOSITION OF EPOXY RESIN AND ADDUCT OF TRIMELLITIC ANHYDRIDE AND POLYALKYLENE GLYCOL

Charles A. Whittemore, Denver, Colo., and Robert E. Spangler, White Bear Lake, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Nov. 28, 1969, Ser. No. 880,910

Int. Cl. C08g *30/121*

U.S. Cl. 260—47 EA 4 Claims

Shelf-stable epoxy resin composition that can be pulverized to a dry powder for fluidized bed or dry spray coating of heated objects to provide tough flexible protective coatings. The composition comprises a high-melting diglycidyl ether of a dihydric phenol and an adduct of one mol of trimellitic anhydride per hydroxyl equivalent of a polyalkylene glycol, especially polyethylene glycol.

3,639,346

VINYL KETONE POLYMERIZATION

Henry L. Hsieh and William R. Busler, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed July 11, 1968, Ser. No. 743,960

Int. Cl. C08g *15/00*

U.S. Cl. 260—63 R 9 Claims

Vinyl ketones are polymerized in the presence of a catalyst formed by an organoaluminum compound and a metal salt of an organic acid or a beta-diketone. Water can be added to the polymerization system. In addition, the vinyl ketones can be copolymerized with alkene oxides.

3,639,347

PROCESS FOR THE PREPARATION OF HIGH MOLECULAR WEIGHT POLYOXY-METHYLENE

Shotaro Sugiura and Takami Ishii, Ube-shi, Japan, assignors to Ube Industries, Ltd., Yamaguchi-ken, Japan

No Drawing. Filed July 22, 1968, Ser. No. 746,264

Claims priority, application Japan, July 28, 1967, 42/48,181

Int. Cl. C08g *1/20*

U.S. Cl. 260—64 12 Claims

Process for the preparation of high molecular weight polyoxymethylene, which comprises polymerizing formaldehyde or a mixture of formaldehyde with a comonomer copolymerizable therewith, in the presence of a catalytic quantity of a mono- or dithio-β-diketone complex.

3,639,348

COPOLYMERS OF PROPARGYL METHACRYLATE AND ACRYLATE

Gaetano F. D'Alelio, South Bend, Ind., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed June 28, 1968, Ser. No. 740,972

Int. Cl. C08f *15/18*

U.S. Cl. 260—67 9 Claims

The copolymers disclosed herein are of propargyl acrylate and methacrylate. Polymerization of propargyl acrylate and methacrylate in free radical systems generally results in crosslinked or gelled products since the free radicals will activate polymerization through the acetylenic as well as through the acrylic unsaturation. Therefore the copolymers are advantageously prepared by anionic polymerization. The comonomers are those which are copolymerizable with acrylates and methacrylates in anionic polymerizations. The comonomers are styrene, its homologs and derivatives, and monounsaturated acrylates and methacrylates. The copolymers are particularly valuable for post-treatment and post-reactions, such as bromination, decaboronation, thermal and radical crosslinking, Mannich reaction with an aldehyde and ammonia or a mono- or di-substituted amine, or reactions with nitrile oxides, aldehydes, ketones, epoxides, sodamide, etc. The copolymers can be tailored to give ultimate properties according to the type and the proportion of comonomers and the proportion of acetylenic groups as well as the type of postreactant or post-treatment.

3,639,349
TRIOXANE COPOLYMERS

Karlheinz Burg, Hofheim, Taunus, and Klemens Gutweiler and Hans Dieter Hermann, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed June 25, 1968, Ser. No. 739,666
Claims priority, application Germany, June 27, 1967, F 52,805
Int. Cl. C08g 1/14, 1/16
U.S. Cl. 260—67 10 Claims

Copolymers of trioxane are prepared by copolymerizing trioxane with cyclic ethers or cyclic or linear acetals and, if desired, a tercomponent, and polyethylene oxide having an average molecular weight in the range of from 300 to 25,000 in the presence of a cationically active initiator.

3,639,350
ESTERIFICATION OF TEREPHTHALIC ACID WITH AN ALKYLENE GLYCOL IN THE PRESENCE OF GUANIDINE OR AN ALKYL GUANIDINE

Stanley D. Lazarus, Petersburg, and Ian C. Twilley, Chester, Va., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 755,451, Aug. 26, 1968. This application Apr. 15, 1970, Ser. No. 28,938
Int. Cl. C07c 67/00; C08g 17/013
U.S. Cl. 260—75 R 16 Claims

A process for the direct esterification of terephthalic acid with an alkylene glycol which comprises esterifying terephthalic acid with an alkylene glycol containing 2 to about 10 carbon atoms per molecule under direct esterification conditions in the presence of an amount of guanidine or an alkyl guanidine sufficient to suppress the formation of aliphatic ether groups.

3,639,351
ADAMANTANE POLYESTERS

Irl N. Duling, West Chester, Abraham Schneider, Overbrook Hills, and Gary L. Driscoll, Boothwyn, Pa., assignors to Sun Oil Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 586,825, Oct. 14, 1967, now Patent No. 3,467,627. This application Mar. 18, 1969, Ser. No. 808,340
The portion of the term of the patent subsequent to Sept. 16, 1986, has been disclaimed
Int. Cl. C08g 17/08
U.S. Cl. 260—75 R 6 Claims

Linear polyesters having good temperature, hydrolytic and U.V. stability are prepared from hydrocarbon adamantane diols and cycloalkyl organic diacids. The hydroxyl groups are bridgehead positions in the adamantane moiety and preferably the adamantane moiety contains substituents at the remaining bridgehead positions thus removing all tertiary hydrogen-atoms therefrom. The polyesters are useful for preparing coatings, films and fibers.

3,639,352
POLYESTERS OF IMPROVED DYEABILITY AND LIGHT FASTNESS

Kanji Katsuura and Keishiro Igi, Kurashiki, Japan, assignors to Kurashiki Rayon Co., Ltd., Kurashiki, Okayama, Japan

No Drawing. Filed Nov. 25, 1969, Ser. No. 879,945
Claims priority, application Japan, Nov. 26, 1968, 43/86,560; Mar. 24, 1969, 44/22,626, 44/22,627
Int. Cl. C08g 17/14
U.S. Cl. 260—75 P 5 Claims

Modified film- or fiber-forming polyesters having a high affinity for basic dyes and improved light fastness comprising a linear polyester modified with radicals containing at least one group selected from sulfonate, sulfinate, phosphonate, phosphinate and carboxylate groups in the form of a metal salt thereof and a minor amount of at least one aliphatic compound having a carbon to oxygen double bond or a carbon to carbon double bond conjugated with another carbon to carbon double bond.

3,639,353
POLYMERS CROSSLINKED WITH POLYCARBODIIMIDES

Harold P. Brown, Kirkwood, Mo., assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 368,395, May 18, 1964. This application Mar. 20, 1970, Ser. No. 21,488
Int. Cl. C08g 22/00
U.S. Cl. 260—77.5 R 9 Claims

Aromatic polycarbodiimides are reacted with polymers containing functional groups solely derived from organic acids. The gelled, crosslinked products are insoluble in alkaline solutions.

3,639,354
ELASTOMERIC POLYURETHANES FROM POLYCARBONATES

Erwin Müller, Leverkusen, and Wilhelm Thoma, Cologne-Flittard, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Feb. 23, 1968, Ser. No. 707,479
Claims priority, application Germany, Feb. 28, 1967, F 51,656
Int. Cl. C08g 22/08
U.S. Cl. 260—77.5 AP 2 Claims

Polyurethanes prepared by reacting diisocyanates, low molecular weight compounds containing at least two hydrogen atoms which are reactive with isocyanates and higher molecular weight, linear hydroxyl-containing polycarbonates based on 1,6-hexanediol and an alkoxylated 1,6-hexanediol of the formula

$$HO-(CH_2)_6-O-\underset{\displaystyle R}{\underset{|}{CH}}-CH_2-OH$$

wherein R is hydrogen or CH_3.

3,639,355
POLYURETHANE COATING COMPOSITIONS HAVING IMPROVED VISCOSITY CHARACTERISTICS

George S. Wooster, Hamburg, and Frank M. Delgado, Tonawanda, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 729,378, May 15, 1968. This application Oct. 8, 1968, Ser. No. 765,970
The portion of the term of the patent subsequent to Dec. 7, 1988, has been disclaimed
Int. Cl. C08g 22/06
U.S. Cl. 260—77.5 AP 5 Claims

Novel polyurethane coating compositions characterized by excellent curing properties and low viscosities are prepared from 4,4'-methylene bis (cyclohexyl isocyanate) and mixtures of polyether triols.

3,639,356
TRICYCLO-DECENE TETRACARBOXYLIC ACID DIIMIDE POLYMERS

Jerald S. Bradshaw, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Original application Oct. 12, 1965, Ser. No. 495,345, now Patent No. 3,413,316, dated Nov. 26, 1968. Divided and this application Dec. 21, 1967, Ser. No. 705,585
Int. Cl. C08g 20/32
U.S. Cl. 260—78 TF 3 Claims

Process for the production of polyimide polymers having a molecular weight less than 10^4 units obtained by the

pyropolymerization of tricyclo[4.2.2.0^{2,5}]-9-R-dec-9-ene-3,4,7,8 tetracarboxylic acid dianhydride in which R is an alkyl group having from 7 to 20 carbon atoms and a C_2–C_{12} polymethylene diamine.

3,639,357

PROCESS FOR PREPARING SUBSTITUTED MALEIMIDE POLYMERS

Hyman L. Cohen, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Mar. 1, 1968, Ser. No. 709,793
Int. Cl. C08g 20/38
U.S. Cl. 260—78 UA 5 Claims

Process for reacting a polymer containing units of a maleimide with a compound having a primary amine group. In one aspect polymers are produced thereby which are good dye mordants.

3,639,358

METHOD OF PREPARING AROMATIC POLYAMIDES

Gus Nichols, Baltimore, Md.
(622 Pierce Ave., Apt. 6, Fort Wayne, Ind. 46807)

No Drawing. Filed June 28, 1968, Ser. No. 741,209
Int. Cl. C08g 20/20
U.S. Cl. 260—78 R 18 Claims

Preparation of fiber forming polyarylene amides by reacting

(1) N-aliphatic acyl amino carboxylic-aliphatic anhydride or by reacting
(2) an arylene dicarboxylic acid-dialiphatic acid anhydride with
(3) an arylene diamine N,N′-aliphatic diacylate.

3,639,359

ANIONIC POLYMERIZATION OF LACTAMS

Johan W. Garritsen and Sebastiaan E. M. Kooijman, Geleen, Johannes H. C. M. A. Gregoire, Beek(L), and Henny Cerbrugge, Geleen, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

No Drawing. Filed Mar. 21, 1969, Ser. No. 809,401
Claims priority, application Netherlands, Mar. 21, 1968, 6804056; Dec. 4, 1968, 6817424
Int. Cl. C08g 20/18
U.S. Cl. 260—78 L 8 Claims

A process for the anionic polymerization of lactams is disclosed, wherein the lactams are polymerized in the presence of a catalyst and a promoter, with the promoter being di - ϵ - caprolactim - ether - dihydrochloride or di - ϵ - caprolactim - ether - monohydrochloride, which latter compound may contain up to 90 mole percent of di - ϵ - caprolactim - ether. The promoters of the present invention allow the polymerization time to be reduced. The polymerization of lactams produces useful polyamides.

3,639,360

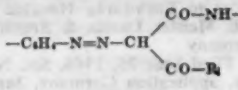
METHOD OF PREPARING COLORED POLYAMIDES

Zbynek Bukac and Jan Sebenda, Prague, Czechoslovakia, assignors to Ceskoslovenska Akademie Ved, Prague, Czechoslovakia

No Drawing. Continuation-in-part of application Ser. No. 804,320, Mar. 4, 1969. This application Sept. 3, 1969, Ser. No. 855,040
Claims priority, application Czechoslovakia, Mar. 4, 1968, 1,702/68
Int. Cl. C08g 20/12, 51/66
U.S. Cl. 260—78 L 3 Claims

Colored polyamides are formed rapidly by polymerization of lactams having rings with 7 to 9 members in the presence of alkali and of an azo dye of the formula R—R′ wherein

R is



R′ is R, hydrogen, lower alkyl, phenyl, di-lower-alkyl-amine, lower alkoxy, or lower acylamine;
R_1 is alkyl C_{1-17} or phenyl; and
R_2 is aryl, alkyl C_{1-18}, or alkoxy-phenyl.

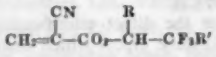
3,639,361

FLUOROCYANOACRYLATES

Jerry E. Robertson, North Oaks, Joseph Kenneth Harrington, Edina, and Elden H. Banitt, Woodbury Township, Washington County, Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Dec. 1, 1967, Ser. No. 687,111
Int. Cl. C08f 3/42
U.S. Cl. 260—78.4 12 Claims

Fluorinated cyanoacrylates having the formula



wherein R is hydrogen, methyl or ethyl, R′ is fluorine, $-CF_3$ or $-(CF_2)_nH$, and n is an integer from 1 to 3 have been found to be useful adhesives which when applied as monomers to adherends rapidly polymerize in the presence of even small amounts of e.g. moisture to form strong bonds. The monomers also polymerize to films and can be used biologically as hemostatics and tissue adhesives.

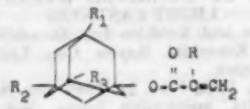
3,639,362

ADAMANTANE ACRYLATE AND METHACRYLATE ESTERS AND POLYMERS THEREOF

Irl N. Duling, West Chester, and Abraham Schneider, Overbrook Hills, Pa., and Robert E. Moore, Wilmington, Del., assignors to Sun Oil Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 625,581, Mar. 24, 1967, now Patent No. 3,518,241. This application Mar. 13, 1969, Ser. No. 807,068
The portion of the term of the patent subsequent to June 20, 1987, has been disclaimed
Int. Cl. C08f 15/16
U.S. Cl. 260—78.5 11 Claims

Novel copolymers having low mold shrinkage properties are prepared from adamantane acrylate and methacrylates of the structure



where R is hydrogen or methyl and R_1, R_2 and R_3 are preferably alkyl or cycloalkyl radicals having 1–20 carbon atoms and a second polymerizable unsaturated monomer such as methyl methacrylate, styrene, acrylonitrile, and vinyl chloride.

3,639,363

REMOVAL OF 5-ETHYL-2-METHYLPYRIDINE FROM PYRIDINE POLYMERS

Richard A. Marshall, Baytown, Tex., assignor to Esso Research and Engineering Company

Filed Mar. 13, 1968, Ser. No. 712,791
Int. Cl. C08f 7/12, 13/02
U.S. Cl. 260—80.3 8 Claims

The process of removing 5-ethyl - 2 - methylpyridine from an aqueous reaction mixture containing polymers produced at least from 2 - methyl - 5 - vinylpyridine monomer wherein a portion of the mixture is vaporized after polymerization effective to remove the 5-ethyl-2-methylpyridine, such as by passing steam through it, and the vapor containing the 5-ethyl - 2 - methylpyridine is withdrawn from the reaction mixture. The polymer, substantially free of 5-ethyl - 2 - methylpyridine, is then separated from the remaining reaction solution and dried to a free-flowing product.

3,639,364

PREPARATION OF N-ALLYL IMINODIACETIMIDE DIOXIME AND POLYMERS THEREOF

Donald Edward Jefferson, Sykesville, Md., assignor to W. R. Grace & Co., Clarksville, Md.

No Drawing. Filed Nov. 3, 1969, Ser. No. 873,597
Int. Cl. C08f 7/12, 15/14
U.S. Cl. 260—80.3 12 Claims

N - allyl iminodiacetamide dioxime and N,N - diallyl aminoacetamidoxime are synthesized by the reaction of N-allyl iminodiacetonitrile and N,N-diallyl aminoacetonitrile with hydroxylamine. These oximes and dioximes are then further polymerized to yield hard resins.

3,639,365

ETHYLENE-VINYL ACETATE-ALLYL GLYCIDYL ETHER TERPOLYMER AND PLASTICIZED COMPOSITIONS CONTAINING SAME

Robert Leonard Adelman, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 441,354, Mar. 19, 1965. This application July 22, 1969, Ser. No. 843,858
Int. Cl. C08f 15/40
U.S. Cl. 260—80.72 4 Claims

Specific copolymers of ethylene, a vinyl ester, and allyl glycidyl ether are disclosed as being particularly suitable plasticizers for polymers such as polyvinyl chloride. The copolymers have a molecular weight of about 400–3000 and comprise 15–40 weight percent ethylene, 35–70 weight percent vinyl ester, and 15–35 weight percent allyl glycidyl ether.

3,639,366

PETROLEUM RESINS

Jacques Broca, Waterloo, and Jean-Paul Loree, Brussels, Belgium, and Ralph Howard Schatz, Westfield, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed June 11, 1968, Ser. No. 735,970
Claims priority, application France, June 12, 1967, 110,033; Great Britain, July 28, 1967, 34,855/67
Int. Cl. C08f 1/70
U.S. Cl. 260—82 8 Claims

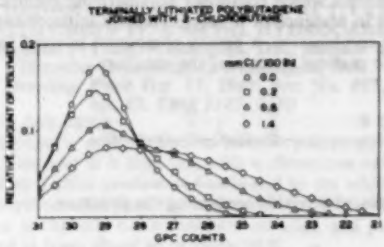
Petroleum resins having low color and excellent color stability are prepared by polymerizing a light steam cracked naphtha having a final boiling point below 70° C. in a homogeneous medium in the presence of a liquid ternary catalyst comprising substantially equimolar quantities of an aluminum halide, a hydrogen halide, and an aromatic hydrocarbon and catalytically hydrogenating the resin resulting therefrom at elevated temperature and pressure.

3,639,367

JOINING LIVE POLYMERS BY MEANS OF MONOHALOGEN COMPOUNDS

Adel F. Halasa, Bath, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation-in-part of application Ser. No. 575,967, Aug. 30, 1966. This application Oct. 8, 1969, Ser. No. 864,584
Int. Cl. C08d 5/04, 3/08, 3/12
U.S. Cl. 260—85.1 6 Claims



Rubber molecules are joined by an organic compound which comprises a single halogen atom.

3,639,368

CATALYSTS FOR POLYMERIZING OLEFINS

Jean Teitgen, Arthez-de-Bearn, and Philippe Mornet, Pau, France, assignors to Societe Nationale des Petroles d'Aquitaine, Tour d'Aquitaine, Courbevoie, France

No Drawing. Filed June 20, 1968, Ser. No. 738,408
Claims priority, application France, June 20, 1967, 111,091
Int. Cl. C08f 1/56, 15/04
U.S. Cl. 260—88.2 13 Claims

An activator for catalytic systems which comprise an organo-metalic compound of a metal belonging to any of Groups I to III of the Periodic System and a compound of a transition metal and which are used for the polymerisation of olefins, consists of a halogenated derivative of 5,8-dioxo-Δ 1,4-methylene-hexahydronaphthalene, containing at least 4 halogen atoms in the molecule.

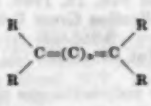
3,639,369

ALLENE POLYMERIZATION AND DERIVATIVES

Charles J. Norton, Berkeley, Calif., and Byron C. Diehl, Indian Hills, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Sept. 30, 1968, Ser. No. 763,638
Int. Cl. C08f 15/40
U.S. Cl. 260—88.2 9 Claims

Polymers having molecular weights above 250 are produced by contacting an organic cumulene compound having the following structure:



with a Lewis acid at about −50° to 500° C. R can be aryl, alkyl, aralkyl, cycloalkyl, alkenyl, alkynes, halides, and hydrogen. and the R's may be the same or different, and *n* is from about 1 to about 20. The polymer contains from about 1.0 to about 1.33 moles of hydrogen per mole of carbon, is resinous and useful, inter alia, in formulations of paints, varnishes, plasticizers, binding agents, and as intermediates in the formation of ion exchange resins.

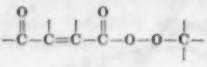
3,639,370

PROCESS FOR POLYMERIZATION OF OLEFINIC COMPOUNDS

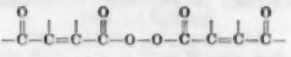
Wolfgang Edl, 3 Marienstrasse, 8021 Grosshesselohe, Germany; Heinz W. Meyer, 1 Arnimstrasse, 8 Munich, Germany; and Dieter Schmid, 11 Habenschadenstrasse, 8023 Pullach, Germany

No Drawing. Filed Dec. 27, 1968, Ser. No. 787,591
Claims priority, application Netherlands, Dec. 28, 1967, 6717760
Int. Cl. C08f 3/62, 3/76, 7/04
U.S. Cl. 260—88.7 10 Claims

A process which comprises polymerizing olefinic compounds in presence of a polymerization initiator comprising, in combination, a peroxy compound selected from an organic perester containing the structure



and a diacyl peroxide containing the structure



and an activating compound selected from the classes

(I) polyfunctional sulfhydryl compounds
(II) compounds with sulfhydryl radicals bonded to heteropolybonds selected from
  (a) salts of thiocyanic acid
  (b) thiocarboxylic acids and thiocarbonamide
  (c) dithiocarbamates and mercaptothiazoles
  (d) thioureas, substituted thioureas, thiobarbituric acids, thiosemicarbazides and mercaptoimidazoles
  (e) O,O-diesters of dithiophosphoric acid and dithiophosphinic acid
(III) alkyl and aryl sulphonyl hydrazides
(IV) 4-hydroxy pyridines and their tautomeric 4-pyridones, and
(V) compounds having the formula $(R)_3P$ and $(RO)_3P$ wherein R is selected from an alkyl group having from 1 to 6 carbon atoms and an aryl group. When the activating compound of classes (I) to (V) contains an acidic hydrogen atom, a base reacting substance, e.g., an amine, therefor included in the initiator.

3,639,371

POLYMERISATION OF CYCLOOLEFINS USING MOLYBDENUM OR TUNGSTEN HALIDE OR OXYHALIDE AND ALUMINUM HALIDE CATALYSTS

Philip Ronald Marshall and Brian John Ridgewell, Hythe, Southampton, England, assignors to The International Synthetic Rubber Company Limited, Southampton, England

No Drawing. Filed Feb. 18, 1969, Ser. No. 800,255
Claims priority, application Great Britain, Feb. 23, 1968, 8,961/68
Int. Cl. C08f 7/02
U.S. Cl. 260—93.1 23 Claims

A process for the polymerisation of at least one cyclic olefin containing 4, 5 or 7 or more ring carbon atoms in the substantial absence of polar compounds and under non-oxidising conditions comprises contacting the said olefin(s) with a catalyst comprising

(a) a halide or oxyhalide of molybdenum or tungsten, wherein the oxidation state of the metal is 4, 5 or 6 and
(b) an aluminium trihalide

In one embodiment, polymers having 50% or more of the chain carbon atoms contained in isobutylene units are obtained by the polymerisation of cyclic olefins.

3,639,372

METHOD FOR THE POLYMERIZATION OF ALKENYL AROMATIC MONOMERS

Winfield Scott Haynes, Jr., Freeland, and Carroll T. Miller, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 24, 1968, Ser. No. 739,416
Int. Cl. C08f 1/06, 1/98, 7/04
U.S. Cl. 260—93.5 S 6 Claims

Styrene-type monomers are polymerized in a plurality of heat exchange vessels connected in series. In a polymerization system for styrene-type monomers where the monomer is polymerized in a polymerization train consisting of at least three polymerization vessels connected in series, increased polymerization capacity is obtained by recirculating the contents of a second heat exchange vessel.

3,639,373

DYEABLE POLYOLEFIN COMPOSITIONS

Orwin G. Maxson and Mack W. Hunt, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

No Drawing. Continuation-in-part of application Ser. No. 746,763, July 23, 1968. This application June 1, 1970, Ser. No. 42,547
Int. Cl. C08f 29/02
U.S. Cl. 260—93.7 13 Claims

Polyolefin compositions containing 0.5 to 20 weight percent of a metal sulfonate composition, which, preferably, is a 50:50 mixture of water-soluble metal sulfonate and oil-soluble metal alkaryl sulfonate. Also, improved method of dyeing polyolefins wherein the improvement comprises use of the metal sulfonate composition described in the foregoing. The polyolefin compositions described herein provide good color development on dyeing and retain their color when subjected to extraction with chlorinated dry cleaning solvents.

3,639,374

PROCESS FOR FLASHING PROPYLENE DILUENT FROM POLYPROPYLENE IN CYCLONE SEPARATOR

Abner B. Stryker, Jr., Severna Park, Md., assignor to Rexall Drug and Chemical Company, Los Angeles, Calif.

Filed Apr. 11, 1963, Ser. No. 272,449
Int. Cl. C08f 3/08, 3/10
U.S. Cl. 260—93.7 2 Claims

This invention is directed to an improved process for producing polypropylene. In particular, this invention relates to a process for producing polyproplene of low volatile content in a diluent free process.

3,639,375

PRODUCTION OF α-OLEFIN POLYMERS

Gerhard Staiger, Ludwigshafen (Rhine), and Joachim Stedefeder, Lampertheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

No Drawing. Filed Jan. 29, 1968, Ser. No. 701,078
Claims priority, application Germany, Feb. 11, 1967, P 17 20 262.9
Int. Cl. C08f 1/56, 3/10
U.S. Cl. 260—93.7 2 Claims

Polymerization of α-olefins having two to eight carbon atoms in the presence of a catalyst consisting of a complex

compound of a titanium (III) halide and an aluminum halide and an organoaluminum compound and, optionally, an organozinc compound, plus a secondary or tertiary amine and also an organic phosphorus compound of the formula below, said catalyst being produced by grinding at least said complex compound with one or both of said amine and said phosphorus compound.

3,639,376

POLYOLEFIN CRYSTALLIZATION ADDITIVES

William G. De Pierri, Jr., and Hulen L. Wilder, Baytown, Tex., assignors to Esso Research and Engineering Company

No Drawing. Filed July 24, 1968, Ser. No. 747,108
Int. Cl. C08d *3/04*; C08f *3/08, 3/02*
U.S. Cl. 260—93.7 7 Claims

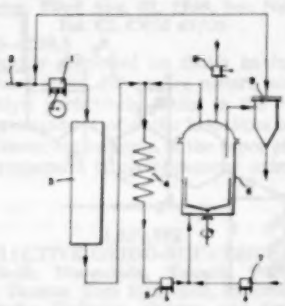
The rate and temperature of crystallization of crystallizable polyolefins is increased by including therein nucleating amounts of esters, polyesters having molecular weights of up to the order of 2000, or mixtures thereof, all structurally derived from certain mono-, di-, and tri-hydric alcohols and polycarboxylic acids having two carboxyl groups separated by a chain of less than 6 carbon atoms.

3,639,377

PRODUCTION OF PROPYLENE POLYMERS

Hans-Georg Trieschmann, Hambach, Karl Wisseroth, Ludwigshafen (Rhine), Richard Scholl, Gruenstadt, and Rudolf Herbeck, Frankenthal, Pfalz, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Aug. 7, 1968, Ser. No. 750,941
Claims priority, application Germany, Aug. 10, 1967, P 17 20 292.5
Int. Cl. C08f *3/10, 3/06*
U.S. Cl. 260—93.7 5 Claims



Process for the polymerization of propylene in the gas phase in which propylene in liquid form is introduced into a reaction zone, vaporized therein and polymerized with a catalyst having high activity.

3,639,378

POLYMERIZATION OF PROPYLENE WITH A CHROMIUM OXIDE CATALYST ACTIVATED WITH A TRIHYDROCARBON ALUMINUM MODIFIED WITH WATER

Wendell P. Long, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Oct. 17, 1969, Ser. No. 867,354
Int. Cl. C08f *3/08, 1/34*
U.S. Cl. 260—93.7 12 Claims

Propylene is polymerized to isotactic polypropylene in high yields and at a high rate using as the catalyst a chromium oxide extended on a silica and activated with a trihydrocarbon aluminum that has been reacted with 0.05 to 1.5 moles of water and optionally also with 0.05 to 1.5 moles of an alcohol or a phenol, the total amount of water and alcohol or phenol being such that some aluminum-to-carbon bonds remain. Preferably, the chromium oxide-on-silica catalyst is chromic oxide that has been partially reduced to form about 55% to about 90%.

3,639,379

POLYMERIZATION OF PROPYLENE WITH A CHROMIUM OXIDE CATALYST ACTIVATED WITH GROUP IV–A METAL HYDROCARBON

Wendell P. Long, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Oct. 17, 1969, Ser. No. 867,353
Int. Cl. C08f *1/42, 3/10*
U.S. Cl. 260—93.7 9 Claims

Propylene is polymerized to isotatic polypropylene in high yields and at a high rate with a chromium oxide extended on a silica catalyst and activated by the addition of a tetrahydrocarbon lead, tin or germanium. Preferably the catalyst is chromic oxide extended on silica and partially reduced to from about 55 to about 90%.

3,639,380

PREPARATION OF MICROCRYSTALLINE WAXES

Constantinos G. Screttas, Gastonia, N.C., assignor to Lithium Corporation of America, New York, N.Y.

No Drawing. Filed Jan. 24, 1968, Ser. No. 699,994
Int. Cl. C08f *1/74, 3/06*
U.S. Cl. 260—94.9 R 3 Claims

Method of preparing microcrystalline waxes by the telomerization of ethylene in the presence of an aromatic or alkyl-aromatic hydrocarbon telogen such as benzene or toluene and of an organolithium-active ether complex such as a butyllithium-tetrahydrofuran complex.

3,639,381

POLYETHYLENE PROCESS AND CATALYST

William J. Craven, Passaic, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed May 10, 1968, Ser. No. 728,336
Int. Cl. C08f *1/66, 3/06*
U.S. Cl. 260—94.9 D 1 Claim

This invention relates to an improved method of preparing polyethylene as a slurry in an inert hydrocarbon diluent. In accordance with the present invention, linear polyethylene having a relatively high melt index is obtained by employing a novel catalyst system which is a mixture of chromium oxide on a silica base and an organoaluminum compound prepared by partially oxidizing a trialkyl aluminum compound with an oxygen-containing gas. Polymerization is carried out in the presence of hydrogen. The polyethylene of this invention is readily processed and can be used in the preparation of films, molded articles and other known uses for polyethylene.

3,639,382

O-ETHYL THREONINE DERIVATIVES

Burton G. Christensen, Scotch Plains, N.J., and William J. Leanza, Staten Island, N.Y., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Dec. 22, 1967, Ser. No. 692,699
Int. Cl. C07c *103/52, 101/30*
U.S. Cl. 260—112.5 2 Claims

This disclosure relates to new compounds represented by O-ethyl threonine, as well as N-substituted and carboxy-substituted derivatives thereof. Several of the compounds, and especially the L-isomers, are useful in the treatment of livestock to control infection by pleuropneumonia-like organisms.

3,639,383
COMPLEXES OF A.C.T.H. PEPTIDES AND POLYPHOSPHORIC ACIDS
Leo Geller, Basel, Switzerland, assignor to Ciba Corporation, New York, N.Y.
No Drawing. Filed Jan. 23, 1968, Ser. No. 699,777
Claims priority, application Switzerland, Feb. 9, 1967, 1,954/67; May 3, 1967, 6,439/67; Dec. 12, 1967, 17,435/67
Int. Cl. A61k *17/16*; C07c *103/52*
U.S. Cl. 260—112.5 15 Claims

Complexes having a prolonged adrenocorticotropic activity, consisting of adrenocorticotropically active peptides and polyphosphoric acids containing on an average at least 7 phosphorus atoms, or their salts.

3,639,384
MONOAZO COMPOUNDS CONTAINING A 3-ACYLAMIDOANILINE COUPLING COMPONENT
Max A. Weaver and Herman S. Pridgen, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed July 12, 1968, Ser. No. 744,335
Int. Cl. C09b *29/06*; D06p *1/02*
U.S. Cl. 260—152 12 Claims

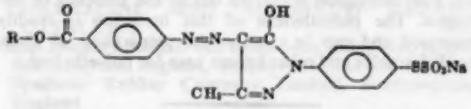
Monoazo compounds having a heterocyclic diazo component and a 3-acylamidoaniline coupling component in which the aniline nitrogen atom is substituted with an aralkyl group are useful as dyes for polyester textile materials.

3,639,385
HETEROCYCLIC MONOAZO COMPOUNDS FROM N,N-DIARALKYL ANILINES AND POLYESTER TEXTILE MATERIALS DYED THEREWITH
Max A. Weaver and Herman S. Pridgen, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed July 26, 1968, Ser. No. 747,813
Int. Cl. C09b *29/08, 29/26*; D06p *3/52*
U.S. Cl. 260—158 9 Claims

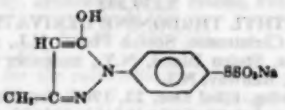
Monoazo compounds having a heterocyclic diazo component and a 3-acylamido-N,N-diaralkylaniline coupling component are useful as dyes for polyester textile materials on which the compounds exhibit improved build-up and fastness properties, such as fastness to light and resistance to sublimation.

3,639,386
MONO AZO PARAZOLONE DYES HAVING THIOSULFATE GROUP
Hubbard Taylor Busby, Jr., Charlotte, N.C., assignor to Martin Marietta Corporation, New York, N.Y.
No Drawing. Filed Nov. 28, 1969, Ser. No. 880,927
Int. Cl. C09b *29/38*; D06p *1/02*
U.S. Cl. 260—163 8 Claims

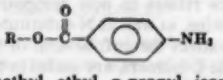
Water-soluble azo dyes of formula



are prepared by coupling equimolar amounts of



and a diazotized aminobenzoate of the formula



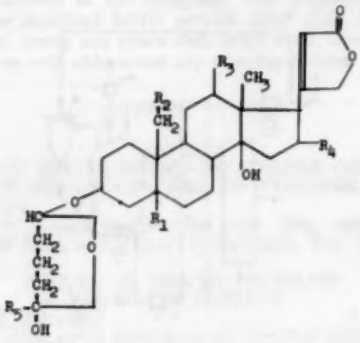
wherein R is methyl, ethyl, n-propyl, isopropyl, isobutyl, n-butyl or β-chloroethyl. Bright golden yellow dyeings result on cotton textiles when aqueous compositions of the dyes are applied thereto and subsequently fixed with the aid of Na_2S_4.

3,639,387
DISPERSE MONOAZO DYES OF THE 5-AMINOPYRAZOLE SERIES
Hans Juergen Sturm, Gruenstadt, Kurt Mayer, Ludwigshafen, Gerhard Kilpper, Mannheim, and Herbert Armbrust, Gruenstadt, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed Dec. 3, 1969, Ser. No. 881,899
Claims priority, application Germany, Dec. 20, 1968, P 18 16 043.5
Int. Cl. C09b *29/38*; D06p *1/02*
U.S. Cl. 260—163 3 Claims

Disperse dyes having a 1-benzyl-5-amino-pyrazole or a 1-substitued-benzyl-5-aminopyrazole as coupling component. They are useful for dyeing polyamide material and particularly polyester material.

3,639,388
TRIDESOXYPYRANOSIDES AND PROCESS FOR THEIR MANUFACTURE
Werner Haede and Ulrich Stache, Hofheim, Taunus, Werner Fritsch, Neuenhain, Taunus, and Kurt Radscheit, Kelkheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Apr. 2, 1969, Ser. No. 812,905
Claims priority, application Germany, Apr. 6, 1968, P 17 68 164.0
Int. Cl. C07c *173/00*
U.S. Cl. 260—210.5 8 Claims

2',3',4'-tridesoxypyranosides of the formula



wherein R_1, R_2, R_3, and R_4 are each hydrogen or hydroxy and R_5 is lower alkyl. The method of making the same by reaction of $LiAlH_4$ with a corresponding 2'-alkyl-2'-carboalkoxytetrahydropyranyl ether having a methyl, hydroxymethylene, or formyl group in the 10-position.

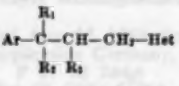
3,639,389
LOW D.E. STARCH HYDROLYSATE DERIVATIVES
Glenn Arden Hull, Oak Park, Ill., assignor to CPC International Inc.
No Drawing. Filed May 15, 1968, Ser. No. 729,399
Int. Cl. C08b *19/01*
U.S. Cl. 260—233.3 R 4 Claims

Covers derivatives of low D.E. starch hydrolysates, including those of the cationic, anionic and non-ionic types.

Also, covers prevention of haze formation in highly concentrated low D.E. starch hydrolysate syrups by having present therein the above derivatives.

3,639,390
AZABICYCLOALKANE DERIVATIVES
Vishwa Prakash Arya, Bombay, India, assignor to Ciba Limited, Basel, Switzerland
No Drawing. Filed Dec. 19, 1967, Ser. No. 691,705
Claims priority, application Switzerland, Dec. 30, 1966, 18,844/66; Nov. 15, 1967, 15,961/67
Int. Cl. C07d *41/00*
U.S. Cl. 260—239 BA **7 Claims**

Compounds of the formula



Ar: aromatic carbocyclic radical or monoazacyclic aromatic radical, particularly aryl-lower alkoxy-substituted phenyl;
R_1: H, aliphatic or aromatic radical;
R_2: H, free or functionally converted carboxyl; or
R_1+R_2: oxo group;
R_3: aliphatic radical, particularly lower alkyl;
Het: N - azabicycloalkyl, particularly 3 - aza - 3 - bicyclo[3,2,2]nonyl radical;

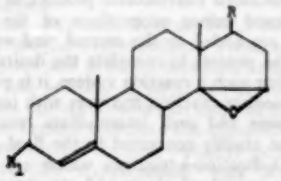
or salts thereof, have antitussive effects.

3,639,391
PROCESS FOR REARRANGEMENT OF CYCLOALKANONE OXIME TO LACTAM
William F. Yates, Chesterfield, Ronald O. Downs, Creve Coeur, and James C. Burleson, Clayton, Mo., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Aug. 22, 1969, Ser. No. 852,502
Int. Cl. C07d *41/06*
U.S. Cl. 260—239.3 **6 Claims**

Boron trioxide supported on thoria having a surface area of at least about 100 square meters per gram provides a catalyst particularly useful in the vapor phase, catalytic rearrangement of cyclic ketoximes to the corresponding lactams; for example, in the vapor phase process for the rearrangement of cyclohexanone oxime to caprolactam.

3,639,392
CARDIOACTIVE OXIDO-BUFATRIENOLIDES
Werner Fritsch, Neuenhain, Taunus, Werner Haede, Hofheim, Taunus, Kurt Radscheit, Kelkheim, Taunus, Ulrich Stache, Hofheim, Taunus, and Ernst Lindner, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Dec. 2, 1969, Ser. No. 881,583
Claims priority, application Germany, Dec. 5, 1968, P 18 12 946.9
Int. Cl. C07c *173/04*
U.S. Cl. 260—239.57 **2 Claims**

Cardioactive oxido-cardadienolides and oxido-bufatrienolides of the formula



(I)

wherein R is a cardenolide or bufadienolide ring and R_1 is —OH in the β-position or keto. Methods of making such compounds. As specific oxido-bufatrienolides: 3-oxo-14,15β - oxido - bufa - 4,20(21),22(23) - trienolide; 3β-hydroxy-14,15β-oxido-bufa-4,20(21),22(23)-trienolide.

3,639,393
3β,14β-DIHYDROXY-CARDA-4,20(22)-DIENOLIDES AND PROCESS FOR PREPARING THEM
Werner Fritsch, Neuenhain, Taunus, and Ulrich Stache and Werner Haede, Hofheim, Taunus, and Kurt Radscheit, Kelkheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Apr. 15, 1969, Ser. No. 816,389
Claims priority, application Germany, Apr. 24, 1968, P 17 68 275.6
Int. Cl. C07c *173/02*
U.S. Cl. 260—239.57 **2 Claims**

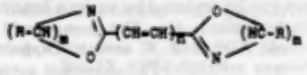
A process for preparing 3β,14β-dihydroxy-carda-4,20-(22)-dienolides which comprises reducing 3-oxo-carda-4,14,20(22)-trienolides by means of complex metal hydrides to the corresponding 3β-hydroxy-carda-4,14,20-(22)-trienolides; treating these compounds with acylating agents; reacting the resulting 3β-acyloxy-carda-4,14,20(22)-trienolides with N-bromo-acyl amides; and catalytically hydrogenating the 4β-acyloxy-3β,14β-dihydroxy-5α,15α-dibromo-card-20(22)-enolides so obtained in the presence of a precious metal catalyst at a pH in the range from 4.5 to 7.5. The products of the invention are valuable therapeutics for oral administration in diseases of the heart and circulation.

3,639,394
PROCESS FOR THE MANUFACTURE OF 14β-HYDROXY-3-OXO-5α-CARD-20(22)-ENOLIDES
Ulrich Stache, Hofheim, Taunus, Werner Fritsch, Neuenhain, Taunus, Werner Haede, Hofheim, Taunus, and Kurt Radscheit, Kelkheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed June 25, 1969, Ser. No. 836,656
Claims priority, application Germany, July 2, 1968, P 17 68 800.5
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.57 **1 Claim**

A 14β-hydroxy-3-oxo-5α-card-20(22)-enolide is prepared by ketalizing a 3-oxo-5α-carda-14,20(22)-dienolide, converting the 3-ketal so obtained with an N-halogenoamide under weakly acid conditions into a 3-ketal of a 3 - oxo - 14β - hydroxy - 15α - bromo - 5α - card - 20(22)-enolide, catalytically hydrogenating this ketal to form the corresponding 3 - oxo - 14β - hydroxy - 5α - card - 20 (22)-enolide, the pH value being between 4.5 and 7, and splitting off the 3-ketal group under weakly acid conditions.

The products of the invention have valuable pharmacological properties.

3,639,395
2,2'-ALKYLENEBIS-2-OXAZOLINES AND OXAZINES
Donald A. Tomalia, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed June 16, 1969, Ser. No. 833,765
Int. Cl. C07d *85/36, 87/20*
U.S. Cl. 260—240 E **4 Claims**



m=2 or 3
n=1–3
R=H or alkyl C_{1-4}

useful as latent curing agents in polyepoxides to produce epoxy resins; to homopolymerize, or to copolymerize with dithiols; to homopolymerize or copolymerize ethylenically, or any combination of these.

3,639,396

DERIVATIVES OF 7-AMINOCEPHALOSPORANIC ACID

Hans Bickel, Binningen, Rolf Bosshardt, Arlesheim, Bruno Fechtig, Binningen, Enrico Menard, Basel, Johannes Mueller, Arlesheim, and Heinrich Peter, Riehen, Switzerland, assignors to Ciba Corporation, New York, N.Y.

No Drawing. Filed June 25, 1968, Ser. No. 739,628

Claims priority, application Switzerland, July 5, 1967, 9,497/67; Oct. 27, 1967, 15,074/67

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 **3 Claims**

Process for the manufacture of 7-acylamino-3-acyloxymethyl-3-cephem-4-carboxylic acids which contain in 3-position an acyloxymethyl group other than acetoxymethyl wherein an amino-protected O-desacetyl-cephalosporin C-dibenzhydrylester is acylated with an acid other than acetic acid, then the side chain in 7-position is eliminated, the benzhydrylester group split off and the 7-amino group acylated.

3,639,397

2-AMINO-3-AMIDINO-QUINOXALINE-DI-N-OXIDES AND THEIR PRODUCTION

Florin Seng, Cologne-Buchheim, Kurt Ley, Odenthal-Globusch, Karl-Georg Metzger, Wuppertal-Elberfeld, and Dieter Fritsche, Wuppertal-Vohwinkel, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

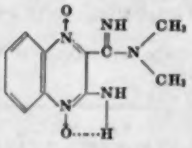
No Drawing. Filed July 29, 1968, Ser. No. 748,153

Claims priority, application Germany, Aug. 17, 1967, F 53,259

Int. Cl. C07d *51/78*

U.S. Cl. 260—247.5 R **8 Claims**

New compounds are provided having antibacterial activity and which are 2-amino-3-amidino-quinoxaline-di-N-oxides prepared from 2-amino-3-cyano-quinoxaline-di-N-oxides as by means of reaction with piperidine. A typical compound is:



or a compound in which the benzene ring is substituted by lower alkyl, lower alkoxy or halogen. The dimethylamino group can be replaced by various heterocyclic radicals, by hydroxyalkyl, etc. The compounds are active against *E. coli, Klebsiella, S. aureus, Diplococcus pneumoniae, Proteus mirabilis, Pseudomonas aeruginosa*, etc. at a dosage of 25 to 500 mg./kg. and may be combined with usual carriers or vehicles.

3,639,398

QUATERNIZED REACTIVE ANTHRAQUINONE DYESTUFFS CONTAINING TRIAZINE AND NICOTINIC ACID GROUPS

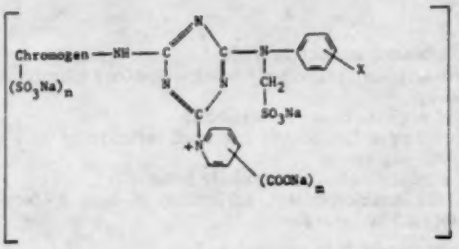
Sandro Ponzini, Castelli Saronno, Monza Paolo, and Jean Stanislao Lawendel, Milan, Italy, assignors to Aziende Colori Nazionali Affini ACNA S.p.A., Milan, Italy

No Drawing. Application June 5, 1968, Ser. No. 749,899, now Patent No. 3,522,232, dated July 28, 1970, which is a division of application Ser. No. 472,668, July 16, 1965, now Patent No. 3,416,875, dated Dec. 17, 1968. Divided and this application Mar. 19, 1970, Ser. No. 21,222

Int. Cl. C07d *55/22*

U.S. Cl. 260—249 **2 Claims**

Reactive triazine dyestuffs having the formula:



wherein the chromogen is an anthraquinone dyestuff residue, said chromogen being attached to the —NH— bridging group through a carbon atom of an aromatic nucleus selected from the group consisting of the nuclei of the phenyl series, wherein X is selected from the group consisting of H, CH_3, OCH_3 and OC_2H_5, n is an integer from 1 to 4, and m is 1 or 2, are effective for dyeing cellulose fibers. The dyestuffs may be absorbed and fixed onto the cellulose fibers by known hot or cold dyeing techniques. Intense dyeings having very good fastness to washing are obtained.

3,639,399

PREPARATION OF AMINO-s-TRIAZINES

Hiram Gerald Daugherty, McIntosh, and William J. Evers, Mobile, Ala., and Philip G. McCracken, Baton Rouge, La., assignors to Ciba-Geigy Corporation, Greenburgh, N.Y.

Filed July 10, 1969, Ser. No. 840,746

Int. Cl. C07d *55/18*

U.S. Cl. 260—249.5 **6 Claims**

A new and improved multi-stage process is provided for preparing amino-s-triazines and particularly, 2,4-dichloro-6-amino-s-triazines which are useful as intermediates. The process involves reacting cyanuric chloride, a selected primary or secondary amine and an alkali metal hydroxide, in two or more stages, wherein about 80 to about 97% of the cyanuric chloride is converted to the 2,4-dichloro intermediate product in the first stage and additional minor proportions of the alkali metal hydroxide are added to the second, and any succeeding stages of the process to complete the desired conversion. By employing such a reaction system, it is possible to prepare intermediate reaction mixtures with insignificant hydrolysis losses and such intermediate reaction mixtures can then be readily converted to the final products, i.e., 2-chloro-4,6-diamino-s-triazines which are useful in inhibiting the growth of plants and are consequently wide-

ly employed as herbicides. The present procedure represents a marked improvement in the process for preparing the 2,4-dichloro-6-amino-s-triazine intermediate products since not only are higher yields and purities of the desired intermediate products obtained but in addition, the process is suitably adapted for large scale production.

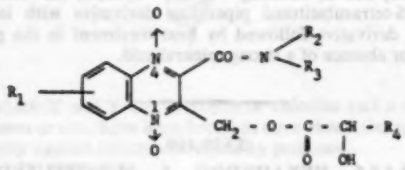
3,639,400

3-CARBOXYLIC ACID-AMIDO-QUINOXALINE-DI-N-OXIDES-(1,4) AND THEIR PRODUCTION

Roland Nast, Cologne-Buchheim, Kurt Ley, Odenthal-Globusch, Ulrich Eholzer, Cologne-Stammheim, Karl-Georg Metzger, Wuppertal-Elberfeld, and Dieter Fritsche, Cologne-Lindenthal, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 25, 1969, Ser. No. 852,917
Claims priority, application Germany, Aug. 30, 1968, P 17 95 264.6
Int. Cl. C07d 51/78
U.S. Cl. 260—250 8 Claims

3-carboxylic acid-amido-quinoxaline-di-N-oxides-(1,4) of the formula:



wherein:

R_1 is hydrogen, lower alkyl, lower alkoxy, hydroxy or an acyloxy moiety of a lower aliphatic carboxylic acid and wherein R_1 is from 1 to 5 such moieties,

R_2 is hydrogen, an aliphatic moiety or an aliphatic moiety substituted by hydroxy, lower alkoxy, carbalkoxy, monoalkylamino or dialkylamino,

R_3 is hydrogen, an aliphatic moiety or an aliphatic moiety substituted by hydroxy, lower alkoxy, carbalkoxy, monoalkylamino or dialkylamino, or R_2 and R_3 are each lower alkyl linked together with the amide nitrogen to form a 5-, 6- or 7-membered heterocyclic ring or R_2 and R_3 are each lower alkyl linked together with an amide nitrogen to form a 5-, 6- or 7-membered heterocyclic ring having N or O as a second heteroatom, and

R_4 is hydrogen, lower alkyl or substituted or unsubstituted phenyl,

are useful for their antibacterial activity.

3,639,401

6-ARYL-2,7-BIS[(TRIALKYLSILYL)AMINO]PYRIDO [2,3-d]PYRIMIDINE COMPOUNDS

Robert F. Meyer, Ann Arbor, Mich., assignor to Parke, Davis & Company, Detroit, Mich.

No Drawing. Filed July 28, 1969, Ser. No. 845,530
Int. Cl. C07d 51/46
U.S. Cl. 260—256.4 3 Claims

6-phenyl- and 6-(p-methoxyphenyl)-2,7-bis[(trialkylsilyl)amino]pyrido[2,3-d]pyrimidines. These compounds are diuretic agents and produce increased urinary excretion of water and sodium. A particular feature, advantageous for some applications, is that they are highly soluble in non-polar organic solvents. The compounds can be produced by reacting 2,7-diamino-6-phenyl- or 6-(p-methoxyphenyl)pyrido[2,3-d]pyrimidine with a silylating agent, preferably a hexaalkyldisilazane.

3,639,402

PROCESS FOR MAKING PIPERAZINES FROM AZIRIDINES

Clarence R. Dick, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Dec. 12, 1967, Ser. No. 689,782
Int. Cl. C07d 51/70
U.S. Cl. 260—268 10 Claims

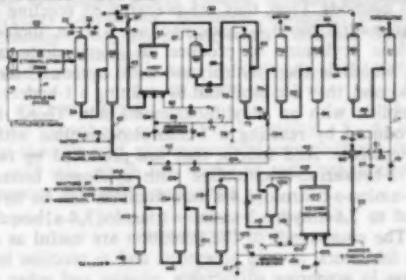
A process for the preparation of 1,4-disubstituted piperazines which comprises reacting an N-substituted aziridine in the presence of a hydrohalide acid and the corresponding soluble metal halide salt, or in an excess of a soluble metal halide salt and a strong non-hydrohalide acid.

3,639,403

METHOD FOR THE PREPARATION OF PIPERAZINE AND SUBSTITUTED PIPERAZINES

Herbert George Muhlbauer, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

Filed Mar. 26, 1969, Ser. No. 810,737
Int. Cl. C07d 51/70
U.S. Cl. 260—268 SY 4 Claims



An improved method for preparing piperazine and N-substituted piperazines from an ethylene oxide-ethylenediamine reaction product characterized by a more efficient use of by-products of the ethylene oxide-ethylenediamine reaction.

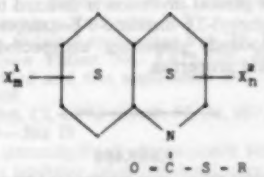
3,639,404

ALKYLTHIOCARBONYLDECAHYDROQUINOLINES

Sidney B. Richter, Chicago, and Alfred A. Levin, Skokie, Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

No Drawing. Filed Dec. 13, 1968, Ser. No. 783,713
Int. Cl. C07d 33/62
U.S. Cl. 260—283 S 3 Claims

This invention discloses new chemical compounds of the formula



wherein X^1 and X^2 are alkyl; m and n are integers from 0 to 3, provided that $m+n$ is from 0 to 3; and R is alkyl. The compounds of the above description are useful as herbicides.

3,639,405

PROCESS FOR PREPARING 3'-HYDROXYQUINOPHTHALONE-5-CARBOXYLIC ACIDS

Richard L. Walker, Pennsville, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed June 17, 1968, Ser. No. 737,298
Int. Cl. C07d 33/48
U.S. Cl. 260—287 R 3 Claims

An improved condensation of trimellitic anhydrides and 3-hydroxy-2-methylquinoline-4-carboxylic acids to yield

3'-hydroxyquinophthalone-5-carboxylic acids useful as dye-stuff intermediates, said improvement comprising carrying out the condensation of reactants, in approximately equimolar portions, in a slurrying quantity of a fatty and/or rosin acid, at a temperature of 160° C. to the boiling point of the fatty and/or rosin acid.

3,639,406

3-AMINO-s-TRIAZOLO[3,4-a]ISOQUINOLINES

Hans K. Reimlinger, Brussels, and Jan Joseph Maurice Vandewalle, Mortsel, Belgium, assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 634,077, Apr. 27, 1967. This application July 10, 1968, Ser. No. 743,619

Int. Cl. C07d *35/36*

U.S. Cl. 260—288 1 Claim

3-amino-s-triazolo[3,4-a]isoquinolines are prepared by several methods. First, they are prepared by reacting a 1-hydrazino-s-triazolo[3,4-a]isoquinoline with a dichloromethylene acylamine to produce an intermediate compound which is then hydrolyzed with aqueous base or acid. Second, they are produced by reacting a 1-hydrazinoisoquinoline with an alkylthiouronium salt. Third, they are produced by reacting a 1-chloroisoquinoline with 5-aminotetrazole. And fourth, they are produced by reacting a 1-hydrazino-isoquinoline with cyanogen bromide. The 3-amino-s-triazolo[3,4-a]isoquinolines can be hydrogenated to 5,6-dihydro-3-amino-s-triazolo[3,4-a]isoquinolines. The compounds of the invention are useful as corrosion inhibitors, as acid acceptors, and as reaction intermediates in preparing surfactants, plastics and other useful compositions.

3,639,407

NOVEL 1,2,3,4,5,6-HEXAHYDRO-6-PHENYL-2,6-METHANO-3-BENZAZOCINES

Frank H. Clarke, Jr., Armonk, Fred B. Block, Hartsdale, and William G. Kofron, Dobbs Ferry, N.Y., assignors to Geigy Chemical Corporation, Greenburgh, N.Y.

No Drawing. Filed May 5, 1965, Ser. No. 453,491

Int. Cl. C07d *29/10, 29/16, 29/20*

U.S. Cl. 260—293.54 8 Claims

This invention relates to novel organic compounds and to novel intermediates employed in their preparation. In particular, the present invention is directed to 1,2,3,4,5,6-hexahydro-6-phenyl-2,6-methano-3-benzazocines, a new class of compounds possessing unexpected and useful pharmacological properties.

3,639,408

PROCESS FOR THE PREPARATION OF ISOQUINUCLIDINE DERIVATIVES

Wataru Nagata, Nishinomiya-shi, and Shoichi Hirai, Ibaraki-shi, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

No Drawing. Filed May 28, 1968, Ser. No. 732,520

Claims priority, application Japan, June 3, 1967, 42/35,647; Feb. 7, 1968, 43/7,620

Int. Cl. C07d *39/00*

U.S. Cl. 260—293.53 20 Claims

An improved method for totally synthesizing isoquinuclidine alkaloids useful as medicaments, starting from a 1-azatricyclo[3.2.1.$0^{2,7}$] octane and an indoleacetic acid anhydride, briefly and stereospecifically.

3,639,409

1,3,8-TRIAZA-2-OXO- OR THIOXO-3-SUBSTITUTED-4-OXO OR IMINO-7,7,9,9-TETRAALKYL SPIRO [4,5]DECANES

Keisuke Murayama, Syoji Morimura, and Toshimasa Toda, Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

No Drawing. Filed June 19, 1968, Ser. No. 738,104

Claims priority, application Japan, June 22, 1967, 43/19,265, 43/19,266; May 31, 1968, 44/37,145, 44/37,146

Int. Cl. C07d *29/36*

U.S. Cl. 260—293.66 19 Claims

New piperidine-spiro-heterocycles; namely, piperidine-spiro-imidazolidines, piperidine-spiro-hydantoins and piperidine-spiro-oxazolidines are valuable light stabilizers for the prevention of the photo-deterioration of various synthetic polymers such as polyolefin, polyurethane, polyamide and the like. These piperidine-spiro-heterocycles are prepared by reacting 4-cyano-4-hydroxy (or -amino)-2,2,6,6-tetrasubstituted piperidine derivative with isocyanate derivative followed by heat treatment in the presence or absence of a strong mineral acid.

3,639,410

1,2,3,4,5,6 - HEXAHYDRO - 8 - SUBSTITUTED-6-ALKYL-11-(H OR ALKYL) - 2,6-METHANO-3-BENZAZOCINES

Noel F. Albertson and David Rosi, East Greenbush, N.Y., and Armando J. Merola, Township of Liberty, Delaware County, Ohio, assignors to Sterling Drug Inc., New York, N.Y.

No Drawing. Filed July 26, 1968, Ser. No. 747,848

Int. Cl. C07d *39/00*

U.S. Cl. 260—293.54 17 Claims

1,2,3,4,5,6 - hexahydro - 3 - (Y^1) - 8 - (Y^2) - 6 - (R^1)-11-(R^2)-2,6-methano-3-benzazocines wherein Y^1 is (1,3-dioxacycloalkyl)alkyl, gem-dialkoxyalkyl, alkanoylalkyl, or (carboxy-, esterified carboxy, or hydroxy)-(alkyl or alkenyl), which are useful as antagonists of strong analgesics, are obtained by alkylation and various other reactions from the corresponding 3-(H) compounds.

3,639,411

1-SUBSTITUTED-2-(PHENYL OR BENZYL)-2- OR 3,3 - PIPERIDINE(MONO OR DICARBOXYLIC) ACIDS AND ESTERS THEREOF, AND OCTAHYDROBENZO[g] - QUINOLINES AND HEXAHYDRO - 5H - INDENO[1,2-b]PYRIDINES PRODUCED THEREFROM

Noel F. Albertson, East Greenbush, and William F. Michne, Colonie, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

No Drawing. Filed May 9, 1968, Ser. No. 728,044

Int. Cl. C07d *29/04*

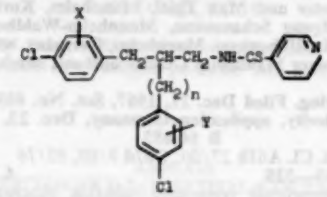
U.S. Cl. 260—293.54 3 Claims

1,2,3,4,4a,5,10,10a - octahydro - 5-(Y^3)-5-(Y^4)-benzo[g]quinolines and 1,2,3,4,4a-9b - hexahydro - 5 - (Y^3)-5-(Y^4) - 5H - indeno[1,2-b]pyridines wherein Y^3 and Y^4 are lower alkyl or phenyl, which are useful as antagonists of strong analgesics, are obtained by cyclizing derivatives of

2 - (phenyl or benzyl) - α - (Y^3) - α - Y^4)-3-piperidinemethanols. The latter are obtained from corresponding 3-piperidinecarboxylic acids.

3,639,412
CERTAIN N-SUBSTITUTED BIS-ARALKYL DERIVATIVES OF THIOISONICOTINAMIDE
Manfred Schorr, Frankfurt am Main, Germany, Hubert Mieth, Vienna, Austria, and Wolfgang Raether, Dreieichenhain, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed May 26, 1969, Ser. No. 827,961
Claims priority, application Germany, May 28, 1968, P 17 70 513.4
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 E **3 Claims**

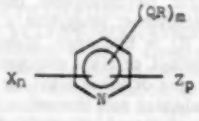
Thioisonicotinic acid amides of the formula:



in which X and Y are hydrogen or chlorine and *n* stands for zero or one, have been found to have chemotherapeutic activity against infections caused by protozoa.

3,639,413
(THIO-, SULFINYL- AND SULFONYL) CONTAINING PYRIDINE COMPOUNDS
Penelope B. Domenico, Danville, Calif., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Sept. 26, 1969, Ser. No. 861,506
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 F **6 Claims**

The present disclosure is directed to (thio-, sulfonyl- and sulfonyl) containing pyridine compounds corresponding to the formula



wherein R represents hydrogen, alkyl, monohalolower-alkyl, alkenyl, monohaloalkenyl, cycloalkyl, monohalocycloalkyl, phenyl, aralkyl, alkaryl or monohalophenyl; Q represents sulfide (—S—), sulfinyl

or sulfonyl

each X independently represents chlorine, bromine, or fluorine; Z represents one of cyano (—CN), carbamoyl ($—CONH_2$) or carboxy (—COOH) or the non-phytotoxic metal salts thereof; *n* represents an integer of 0 to 3, inclusive; *m* represents an integer of 1 to 3, inclusive; *p* represents an integer of 1 or 2 and the sum of $n+m+p$ equals an integer of 2 to 5, inclusive, with the proviso that when Q is other than sulfide (—S—), R is other than hydrogen and when R is H, *m* is not greater than 2. The preparation of these compounds and their utility as pesticides is also taught.

3,639,414
1-[2 - (2-SUBSTITUTED - 3 - INDOLYL)ETHYL]-4-SUBSTITUTED-PIPERIDINES AND 4 - SUBSTITUTED-1,2,5,6-TETRAHYDROPYRIDINES
Sydney Archer, Bethlehem, N.Y., assignor to Sterling Drug Inc., New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 732,250, May 31, 1968, which is a continuation-in-part of application Ser. No. 634,899, May 1, 1967, both now abandoned. This application Sept. 16, 1969, Ser. No. 858,500
Int. Cl. C07d *31/42*
U.S. Cl. 260—295 B **3 Claims**

Novel 1-[2-(2-substituted - 3 - indolyl)ethyl]-4-substituted piperidines and 4-substituted-1,2,5,6-tetrahydropyridines having psychomotor depressant activity.

3,639,415
PHOSPHORIC ACID SALT OF 4-METHYL-5-β-CHLORO-ETHYL-THIAZOLE
Lajos Guczoghy, Mária Puklics, György Kelemen, and György Leszkovsky, Budapest, Hungary, assignors to Chinoin Gyogyszer-es Vegyeszeti Termekek Gyara RT, Budapest, Hungary
No Drawing. Filed May 4, 1966, Ser. No. 547,402
Int. Cl. C07d *91/32*
U.S. Cl. 260—302 E **1 Claim**

New phosphoric acid salt of 4 - methyl - 5 - β - chloroethyl-thiazole and pharmaceutical compositions containing said salt, which are useful as sedatives, antiepleptic, hypnotics, and anticonvulsants.

3,639,416
PROCESS FOR THE PREPARATION OF BIS-ISOXAZOLINE
Daniel Batigne, Villeurbanne, and Jacques Boichard, Michel Gay, and Raymond Janin, Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France
No Drawing. Filed Mar. 4, 1968, Ser. No. 710,401
Claims priority, application France, Mar. 16, 1967, 99,101; Mar. 1, 1968, 142,055
Int. Cl. C07d *85/16*
U.S. Cl. 260—307 **3 Claims**

Bis-3,3'-isoxazoline is made by oxidizing ethylene in an aqueous medium with nitric acid or a nitrogen oxide.

3,639,417
2-TETRAZOLYLTHIOHYDROQUINONES
Ralph Frederick Porter, Judith A. Schwan, and John W. Gates, Jr., Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Original application Feb. 28, 1963, Ser. No. 261,835, now Patent No. 3,379,529, dated Apr. 23, 1968. Divided and this application Oct. 26, 1967, Ser. No. 705,869
Int. Cl. C07d *55/62, 57/00, 99/10*
U.S. Cl. 260—308 D **5 Claims**

Certain 2-tetrazolylthiohydroquinones and their use as photographic inhibitor releasing developers.

3,639,418
BISHYDANTOINS
Rudolf Merten, Leverkusen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Feb. 19, 1968, Ser. No. 706,621
Claims priority, application Germany, Mar. 1, 1967, F 51,675
Int. Cl. C07d *19/32*
U.S. Cl. 260—309.5 **4 Claims**

Carboxylic acid esters containing hydantion or thiohydantoin groups which can be prepared by reacting an

ethylene-1,2-carboxylic acid diester with a primary polyamine to yield an amino succinic acid group containing intermediate, further reacting the intermediate with a monoiso(thio)cyanate and cyclising the resulting reacted intermediate immediately or subsequently.

3,639,419

ARYLPYRAZOLINE SULPHONIC ACID ESTERS

Siegfried Rosenberger, Domat Ems, Graubunden, Eduard Troxler, Basel, and Heinrich Hausermann, Riehen, Switzerland, assignors to Ciba-Geigy Corporation

No Drawing. Filed Dec. 18, 1967, Ser. No. 691,209
Claims priority, application Switzerland, Dec. 23, 1966, 18,479/66
Int. Cl. C07d *49/18*
U.S. Cl. 260—310 D **7 Claims**

Di- and tri-arylpyrazoline sulphonic acid esters are described which have unexpectedly a very good affinity to cellulose ester fibers and optically brighten these fibers in pure white, free from undesirable greenish or greenish-blue hues even when applied in higher concentrations; compositions containing such novel esters as well as other substances, especially detergents, are also described; and a process for optically brightening cellulose ester and particularly cellulose acetate fibers is also disclosed.

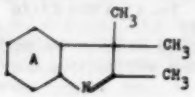
3,639,420

PROCESS FOR THE PREPARATION OF 2,3,3-TRIMETHYL INDOLENINES

Hugo Illy and Lance Harmon Funderburk, Toms River, N.J., assignors to Toms River Chemical Corporation, Toms River, N.J.

Filed Feb. 21, 1968, Ser. No. 707,073
Int. Cl. C07d *27/56*
U.S. Cl. 260—319.1 **4 Claims**

A process is provided for the preparation of 2,3,3-trimethyl indolenines of the formula



wherein ring A can contain substituents such as halogen, illustratively chlorine or bromine, lower alkyl, such as methyl, ethyl, propyl or butyl, lower alkoxy, such as methoxy, ethoxy, propoxy or butoxy, comprising reacting a methyl-isopropyl-ketone-phenylhydrazone containing at least one hydrogen in ortho position to the hydrazino group with an acid having a pK value of less than 1.3 in a mol ratio of 1 to 10 mole equivalents of acid per mole of the methyl-isopropyl-ketone-phenylhydrazone at a temperature of 65° to 100° C.

3,639,421

DIAZOTYPE MATERIALS

Rafiqul Islam, Sidney George Garnish, Murray Figov, and Henry Mustacchi, London, England, assignors to GAF (Great Britain) Limited

No Drawing. Filed May 10, 1966, Ser. No. 548,840
Claims priority, application Great Britain, May 14, 1965, 20,490/65
Int. Cl. C07c *113/00*; C07d *27/00*; G03c *1/52*
U.S. Cl. 260—326.3 **4 Claims**

4-(N-pyrrolidino) - 3 - substituted anilines wherein the 3-substituent is a benzyloxy, carboxy, acetoxy, benzoyloxy or trifluoromethyl.

3,639,422

4-PHENYLINDOLE-1 (AND 7)-ACETIC ACIDS

Clifton John Blankley, Ann Arbor, Mich., assignor to Parke, Davis & Company, Detroit, Mich.

No Drawing. Filed July 28, 1969, Ser. No. 845,529
Int. Cl. C07d *27/56*
U.S. Cl. 260—326.13 R **5 Claims**

4-phenylindole - 1 - acetic acid, 4-phenylindole-7-acetic acid, α-methyl derivatives, and carboxylate salts. The compounds are anti-inflammatory agents useful in relieving or preventing inflammation. They can be produced from the corresponding lower alkyl esters by hydrolysis, or from the corresponding α-cyano lower alkyl esters by hydrolysis and accompanying decarboxylation of one of the two resulting carboxyl or carboxylate groups.

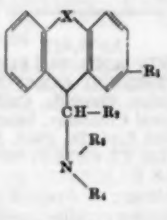
3,639,423

TRICYCLIC AMINOMETHYL DERIVATIVES

Werner Winter and Max Thiel, Mannheim, Kurt Stach and Wolfgang Schaumann, Mannheim-Waldhof, and Annemarie Ribbentrop, Mannheim, Germany, assignors to Boehringer Mannheim Gesellschaft mit beschrankter Haftung

No Drawing. Filed Dec. 11, 1967, Ser. No. 689,319
Claims priority, application Germany, Dec. 23, 1966, B 90,455
Int. Cl. A61k *27/00*; C07d *9/00, 65/16*
U.S. Cl. 260—328 **4 Claims**

Novel compounds possessing valuable pharmacological properties and useful as muscle relaxants, tranquilizing agents, anti-convulsives, etc. are disclosed. The compounds are defined by the following formula:



wherein X is sulfur, oxymethylene, thiamethylene, thiaethylene, iminomethylene, propylene - 1,3 or alkylated iminomethylene; R_1 is hydrogen, lower alkyl, halogen, alkoxy trifluoromethyl, or alkyl mercapto and R_2, R_3 and R_4 are each hydrogen or lower alkyl; or a physiologically acceptable acid addition salt thereof.

There are also disclosed compositions containing the above compounds as active ingredient and methods of using the same.

3,639,424

EXTRUDABLE AND MOLDABLE PLASTIC COMPOSITIONS REINFORCED WITH HEAT SET POLYESTER FIBERS

Theodore F. Gray, Jr., James C. Weaver, and Robert L. Combs, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Feb. 19, 1970, Ser. No. 12,854
Int. Cl. C08g *37/18, 37/34, 39/10, 45/14*
U.S. Cl. 260—873 **10 Claims**

A molding composition including a polymer such as a polyolefin, and uniformly dispersed therein at least about 10% by weight of the composition staple length fiber having a denier of from about 1.5 to about 25, the fiber being of man-made polymers, such as poly(ethylene terephthalate) or poly(1,4-cyclohexylenedimethylene terephthalate). Uniform dispersion is achieved by heat setting fiber in the above denier range, preferably at constant length,

and cutting it to staple length. The composition is produced by the steps of (a) heatsetting the fiber, (b) cutting the fiber to staple length, (c) fluffing the staple fibers to separate them, and (d) blending the fibers with a polymer.

3,639,425
PEROXYGEN COMPOUND
Robert C. P. Cubbon and John E. Braid, Luton, and Colin Hewlett, Harpenden, England, assignors to Laporte Chemicals Limited
No Drawing. Filed Apr. 3, 1968, Ser. No. 718,354
Claims priority, application Great Britain, Apr. 5, 1967, 15,543/67
Int. Cl. C07c 73/06; C07d 15/00
U.S. Cl. 260—340.2 1 Claim

The invention provides hydroperoxides of β- or γ-keto-esters or β- or γ-keto-acids, advantageously, of the formula

$$R.CO.(CH_2)_x.COOR^1$$

R and R^1 being radicals that maintain their identity in the presence of hydrogen peroxide and hydrogen ions.

3,639,426
4-OXO-9-HYDROXY-7-(3-METHYL-2-OCTYL)-1,2,3,4-TETRAHYDROCYCLOPENTA[c][1]BENZOPYRAN
Raj K. Razdan, Belmont, Felix E. Granchelli, Arlington, and Harry G. Pars, Lexington, Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.
No Drawing. Continuation-in-part of application Ser. No. 642,192, May 29, 1967. This application Jan. 8, 1970, Ser. No. 1,535
Int. Cl. C07d 7/26
U.S. Cl. 260—343.2 R 1 Claim

4-oxo-9-hydroxy-7-(3-methyl - 2 - octyl)-1,2,3,4-tetrahydrocyclopenta[c][1]benzopyran, used as an intermediate in the preparation of 1,2,3,4-tetrahydrocyclopenta[c][1]benzopyrans and 1,2,3,4,12,13-hexahydrocyclopenta[c][1]benzopyrans which have C.N.S. activity.

3,639,427
NOVEL 1,2,3,4-TETRAHYDRO - (AND 1,2,3,4,12,13-HEXAHYDRO) CYCLOPENTA[c][1]BENZOPYRANS
Raj K. Razdan, Belmont, Felix E. Granchelli, Arlington, and Harry G. Pars, Lexington, Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.
No Drawing. Continuation-in-part of application Ser. No. 642,192, May 29, 1967. This application Jan. 8, 1970, Ser. No. 1,536
Int. Cl. C07d 7/18
U.S. Cl. 260—345.3 3 Claims

New 1,2,3,4 - tetrahydrocyclopenta[c][1]benzopyrans and 1,2,3,4,12,13 - hexahydrocyclopenta[c][1]benzopyrans having C.N.S. activity.

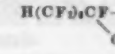
3,639,428
4-(TETRAHYDROPYRAN-2'-YLOXY)-PENTYL-PHOSPHONATES
John H. Fried, Palo Alto, Calif., assignor to Syntex Corporation, Panama, Panama
No Drawing. Filed Dec. 4, 1967, Ser. No. 687,502
Int. Cl. C07f 9/40
U.S. Cl. 260—345.9 2 Claims

Preparation of α,β-unsaturated carbocyclic ketones by reacting an enol lactone with a carbanion generated by treatment of a methylphosphonate or a mono-substituted methylphosphonate with base.

3,639,429
PROCESS FOR OXIDIZING POLYFLUORINATED OLEFINES
Viktor Weinmayr, Landenberg, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed July 9, 1963, Ser. No. 293,899
Int. Cl. C07c 53/36, 51/38; C07d 1/06
U.S. Cl. 260—348.5 R 8 Claims

1. A process for preparing predominantly COF_2 which process comprises contacting in a reaction zone and at a temperature range from 170° C. to 190° C. the compound $CF_2{=}CF_2$ with a mixture consisting essentially of molecular oxygen and oxygen difluoride, said mixture having a ratio of approximately 24 volumes of oxygen difluoride per 1000 volumes of molecular oxygen, wherein part of the product COF_2 is recycled and mixed with said $CF_2{=}CF_2$ prior to the entry of said $CF_2{=}CF_2$ into said reaction zone; and recovering the product COF_2 from the reaction mixture.

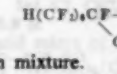
2. A process for preparing predominantly the compound



which process comprises contacting at a temperature range from 50° C. to 120° C. the compound

$$H(CF_2)_6CF_2{=}CH_2$$

with a mixture consisting essentially of molecular oxygen and oxygen difluoride, said mixture having an oxygen difluoride concentration of from 1.6 to 670 volumes of oxygen difluoride per 1000 volumes of molecular oxygen; and recovering the product



from the reaction mixture.

3,639,430
VAT DYESTUFFS
Hans Altermatt, Reinach, Basel-Land, Switzerland, assignor to Ciba Limited, Basel, Switzerland
No Drawing. Continuation-in-part of application Ser. No. 337,516, Jan. 14, 1964, which is a continuation-in-part of applications Ser. No. 147,139, Oct. 24, 1961, and Ser. No. 216,749, Aug. 14, 1962. This application Jan. 16, 1968, Ser. No. 698,141
Claims priority, application Switzerland, Oct. 28, 1960, 12,112/60
Int. Cl. C09b 1/54, 1/56
U.S. Cl. 260—368 2 Claims

New water-soluble vat dyestuffs containing aryloxy- or arylmercapto groups and two anthraquinone radicals or a vattable chromophor containing at least 4 fused rings.

3,639,431
PRODUCTION OF BENZOTRIAZOLES
Lucian W. McTeer, South Charleston, and Robert G. Kelso, St. Albans, W. Va., assignors to Union Carbide Corporation
No Drawing. Filed May 24, 1968, Ser. No. 731,718
Int. Cl. C07d 55/04; C23f 11/14
U.S. Cl. 252—390 3 Claims

In a process for recovering benzotriazole that is produced by reacting an ortho-phenylenediamine with nitrous acid in aqueous media, the improvement which comprises adding a polyhydroxy compound to crude benzotriazole separated from the aqueous phase of the product mixture and codistilling the benzotriazole and the polyhydroxy compound, thereby increasing the yield and lessening the danger of explosive decomposition of the benzotriazole during distillation. In a preferred embodiment of

the improvement a substantially water-insoluble alkanol is initially added to the aqueous product mixture containing the benzotriazole in order to facilitate the separation of the benzotriazole from the aqueous layer of the product mixture.

3,639,432
2-HYDROXY-1,4-NAPHTHOQUINONE AMINOBENZOATES

Giancarlo Berti, Pisa, Italy, assignor to Finanz und Kompensations Anstalt, Vaduz, Leichtenstein, Germany

No Drawing. Continuation-in-part of application Ser. No. 493,245, Oct. 5, 1965. This application June 12, 1968, Ser. No. 736,285
Claims priority, application Austria, Oct. 5, 1964, 8,472/64
Int. Cl. C07c *79/46, 101/62*
U.S. Cl. 260—396 R **14 Claims**

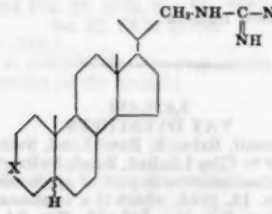
2 - hydroxy - 1,4 - naphthohydroquinone aminobenzoates, prepared by catalytically hydrogenating the condensation product of a 2-hydroxy-1,4-naphthoquinone and a nitrobenzoyl halide, are useful as antihaemorrhagic and capillary protective agents.

3,639,433
22-GUANIDYL STEROIDS AND METHOD OF MAKING AND USING THE SAME

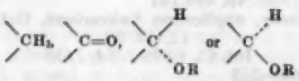
Rainer Philippson, Bergkamen, Heinz Gibian, Berlin, Mahmud Muftic, Genf, and Emanuel Kaspar, Kamen, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

No Drawing. Filed June 13, 1968, Ser. No. 742,473
Int. Cl. C07c *169/14*
U.S. Cl. 260—397 **8 Claims**

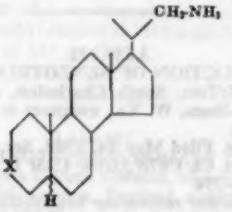
A compound of the formula



wherein X denotes



R is hydrogen or acyl, and rings A and B may be in trans or cis position relative to each other, is produced by reacting a compound of the formula



wherein X has the same meaning as in the formula above with a substance selected from the group consisting of cyanamide and salts of S-alkyl- and S-aralkylisothiourea; and esterifying a 3-hydroxl group or saponifying a 3-acyloxy group of the thus obtained reaction product. Such compound is effective in the treatment of certain infectious conditions including fungus infections.

3,639,434
17-ACYLOXYSTEROIDS AND THEIR MANUFACTURE

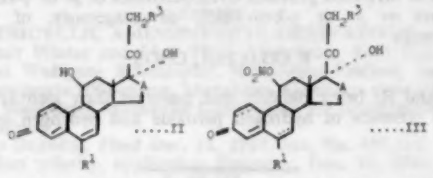
Peter Oxley and John Rosindale Housley, Nottingham, England, assignors to Boots Pure Drug Company Limited, Nottingham, England

No Drawing. Filed Feb. 2, 1967, Ser. No. 613,454
Int. Cl. C07c *169/32*
U.S. Cl. 260—397.45 **2 Claims**

The invention concerns novel steroids having valuable properties as anti-inflammatory agents in veterinary and human medicine.

The new steroids are 17α - acyloxy-β-hydroxy progesterones and their Δ^1, Δ^6, $\Delta^{1,6}$, 21-halo-Δ^1 and 21-halo-$\Delta^{1,6}$ derivatives.

Processes for their preparation include the conversion of a compound of the general Formula II into the corresponding 11β-nitrate ester III,



where R^3 is chlorine, bromide, alkanoyloxy, an alkanesulphonyloxy- or arenesulphonyloxy-group and R^1, A and the symbol ═ are as hereinbefore defined, and thereafter

(a) replacing the group R^3 by hydrogen, then converting the 17α-hydroxyl group into the group $O.COR^2$ and finally reducing the 11β-nitrate group to an 11β-hydroxyl group; or (b) converting the 17α-hydroxyl group into the group $O.COR^2$, then reducing the 11β-nitrate group to an 11β-hydroxyl group and finally replacing the group R^3 by hydrogen; or (c) converting the 17α-hydroxyl group into the group $O.COR^2$, then replacing the group R^3 by hydrogen and finally reducing the 11β-nitrate group to an 11β-hydroxyl group.

3,639,435
3-OXYGENATED 21β-HYDROCARBONSULFONYL-5α-PREGNA-17(20),20-DIENES AND 1,3,5(10)-TRISDEHYDRO 19 - NOR DERIVATIVES CORRESPONDING

Walter R. Benn, Deerfield, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 773,273, Nov. 4, 1968. This application Dec. 22, 1969, Ser. No. 887,426
Int. Cl. C07c *169/08, 169/20*
U.S. Cl. 260—397.5 **11 Claims**

3-oxygenated 21β - hydrocarbonsulfonyl-5α-pregna-17 (20),20-dienes and 1,3,5(10)-trisdehydro 19-nor derivatives corresponding possessing anti-microbial, e.g. antiprotozoal, properties are prepared by contacting the corresponding 17α-ethynyl-17β-hydroxy starting material with the appropriate hydrocarbonsulfinyl halide and subjecting the resulting 17-hydrocarbonsulfinate ester to heating at elevated temperature.

3,639,436
OMEGA,OMEGA-DINITROALKANOIC ACIDS, ESTERS, AND ESTER-SALTS

Hans D. Holtz, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Dec. 11, 1967, Ser. No. 689,302
Int. Cl. C09f *7/00*
U.S. Cl. 260—404.5 **2 Claims**

Novel compounds, omega,omega-dinitroalkanoic acids are prepared by initially reacting certain oxygen-containing cycloalkane derivatives with aqueous nitric acid in the

presence of a catalyst composition, such as ammonium vanadate (V), having one or more metallic elements selected from Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Y, La, Ce, Pr, Nd, and Sm, preferably V and Cu, and recovering the desired novel acids from the reaction product. Novel esters and alkali metal salts of these esters can be prepared from the novel acids by suitable reactions. The novel acids and derivatives thereof are useful intermediates for the production of omega-amino acids which are useful in the synthesis of polyamide polymers, such as nylon 12.

3,639,437

PRODUCTION OF CARBOXYLIC ESTERS OF β-FORMYLCROTYL ALCOHOL

Roman Fischer and Horst Pommer, Ludwigshafen (Rhine), Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed July 31, 1968, Ser. No. 748,911

Claims priority, application Germany, Aug. 8, 1967, P 12 97 597.2-42

Int. Cl. C07c *67/00*; C11c *3/14*

U.S. Cl. 260—405.6 **6 Claims**

A process for the production of carboxylic esters of β-formylcrotyl alcohol in which a carboxylic ester of 2-formyl-2-hydroxybutene-(3) or an acetal or acylate of the same is rearranged in the presence of metallic copper or a copper (I) or copper (II) compound or a mixture of the same with or without hydrolysis of the products obtained.

3,639,438

α-POLYFLUOROALKYL ACRYLIC ACIDS AND DERIVATIVES

Kenneth C. Smeltz, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Feb. 20, 1968, Ser. No. 706,803

Int. Cl. C11c *3/00*

U.S. Cl. 260—408 **3 Claims**

α-Polyfluoroalkyl acrylic compounds of the formula

$$R_f(CH_2)_m-C(=CH_2)-V$$

where R_f is perfluoroalkyl, m is 2 to 12, and V is —COOH, —COOR, —$CONR_2$, —COX or —CN.

Homopolymers of the above compounds formed by polymerization through the double bond of the acrylic moiety.

Copolymers of the above compounds with other vinylidene monomers.

The polymers are useful in treating substrates to impart oil and water repellency thereto.

3,639,439

RHODIUM (I) HALIDE COMPLEXES

Kenneth C. Dewhirst, San Pablo, Calif., assignor to Shell Oil Company, New York, N.Y.

No Drawing. Original application Dec. 10, 1964, Ser. No. 417,482, now Patent No. 3,489,786, dated Jan. 13, 1970. Divided and this application Nov. 30, 1967, Ser. No. 705,582

Int. Cl. C07c *11/26*; C07d *103/00*

U.S. Cl. 260—429 R **8 Claims**

An improved homogeneous hydrogenation catalyst composition comprises rhodium halide complexes incorporating stabilizing phosphine or arsine ligands, and excess ligand.

3,639,440

PROCESS FOR THE MANUFACTURE OF SILICON CONTAINING NEUTRAL POLYPHOSPHORIC ACID ESTER DERIVATIVES

Klaus-Dieter Kampe and Edgar Fischer, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Original application Oct. 23, 1965, Ser. No. 504,187. Divided and this application Apr. 14, 1969, Ser. No. 841,644

Claims priority, application Germany, Oct. 28, 1964, F 44,326

Int. Cl. C07f *7/04, 7/18, 7/08*

U.S. Cl. 260—448.2 E **4 Claims**

Neutral polyphosphoric acid ester derivatives are prepared by reacting organosilicon compounds with phosphorus pentoxide at a temperature within the range of —78° C. to +140° C. in the absence of moisture the mole ratio of organisilicon compound to phosphorus pentoxide being from 0.01 to 9 moles organosilicon compound to 1 mole phosphorus pentoxide. The neutral polyphosphoric acid ester derivatives are useful as catalysts for the production of polyacetals.

3,639,441

PENTAERYTHRITOL-DI- AND TETRA-PIVALOYL-DIORTHOSILICIC ACID-HEXA-ALKYL ESTERS

Hans Feichtinger, Dinslaken, and Herbert Gothel, Oberhausen-Holten, Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen-Holten, Germany

No Drawing. Filed Oct. 2, 1969, Ser. No. 863,315

Claims priority, application Germany, Oct. 3, 1968, P 18 00 875.8

Int. Cl. C07f *7/09*

U.S. Cl. 260—448.8 R **5 Claims**

Diorthosilicic acid esters of the formula:

$$A(OSi)_2(OR')_6$$

wherein A is a monopentaerythritol-dicarboxylic acid ester or a dipentaerythritol-tetra-carboxylic acid ester which acid has a quaternary carbon atom therein and R' is an alkyl group of more than 3, preferably at least 8, carbon atoms; and lubricants containing such.

3,639,442

PREPARATION OF ORGANIC ISOCYANATES FROM ISOCYANIDE DIHALIDES

Dieter Arlt, Cologne-Buchheim, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 3, 1968, Ser. No. 742,172

Claims priority, application Germany, July 6, 1967, P 16 43 975.1

Int. Cl. C07c *119/04*

U.S. Cl. 260—453 P **4 Claims**

Organic isocyanates are produced by reacting organic isocyanide dihalides with anhydrous strong acids containing dissociable hydrogen attached to oxygen. The isocyanates produced are useful in the preparation of insecticides, coatings, adhesives, films, fibers, foams, elastomers and the like.

3,639,443

4-PHENYLBICYCLO[2.2.2]OCT-2-EN-1-YL URETHANS

Walter A. Gregory and James C. Kauer, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 467,753, June 28, 1965, now Patent No. 3,413,348. This application Jan. 26, 1968, Ser. No. 700,695

Int. Cl. C07c *125/06*

U.S. Cl. 260—471 C **2 Claims**

4-phenylbicyclo[2.2.2]oct-2-en-1-yl urethans as intermediates in the preparation of phenylbicyclo[2.2.2]oct-2-ene-1-amines.

Preparation of the 4-phenylbicyclo[2.2.2]oct-2-en-1-yl urethans by a modified Curtius reaction.

3,639,444
NITRO ALKYL-N-PHENYL CARBAMATES
Richard Wessendorf, Hilden, Rhineland, Heinz Günter Nösler, Monheim, Rhineland, and Horst Bellinger, Dusseldorf, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany
No Drawing. Original application July 25, 1968, Ser. No. 747,453. Divided and this application Feb. 3, 1970, Ser. No. 12,513
Claims priority, application Germany, July 25, 1967, H 63,380
Int. Cl. C07c *125/06*
U.S. Cl. 260—472 10 Claims

Compositions and method for killing bacteria and fungi having as the active ingredient a nitro alkyl-N-phenyl carbamate and to novel bromo-nitroalkyl - N - phenyl-carbamates.

3,639,445
PROCESS FOR MAKING SUBSTITUTED CROTONATES
Chester E. Pawloski, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Jan. 8, 1968, Ser. No. 696,158
Int. Cl. C07c *69/66*
U.S. Cl. 260—473 A 3 Claims

Esters of crotonic acid having an ether substituent in the 3-position are prepared by reacting an acetoacetic ester with an acetal under acid esterification conditions whereby low boiling reaction byproducts are distilled from the reaction mixture substantially as they are formed.

3,639,446
4,4'-DIBROMO- AND 4-CHLORO-4'-BROMO-BENZILIC ACID ESTERS
Kurt Gubler, Riehen, Switzerland, assignor to Geigy Chemical Corporation, Ardsley, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 589,530, Oct. 26, 1966. This application Jan. 26, 1968, Ser. No. 700,750
Claims priority, application Switzerland, Dec. 13, 1965, 17,135/65; Feb. 2, 1967, 1,566/67; May 17, 1967, 6,921/67
Int. Cl. A01n *9/02*; C07c *69/76*
U.S. Cl. 260—473 A 9 Claims

Certain esters of 4,4'-dibromo- and 4-chloro-4'-bromobenzilic acids are disclosed as having useful acaricidal, and in the case of certain esters, also insecticidal activities superior to those of the corresponding esters of 4,4'-dichloro-benzilic acid. The preparation of the new esters, and compositions containing them as active ingredients as well as a method of controlling, in particular, Acarinae with the aid of the new esters, and a method of controlling certain insects, in particular the Colorado beetle on potato plants, with the aid of isopropyl 4,4'-dibromobenzilate are also described.

3,639,447
ALKYL DIESTERS OF 3,5-DIALKYL-4-HYDROXYPHENYLALKANOIC ACID
George Wright Taylor and Derek Harold Wood, Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Original application Mar. 28, 1966, Ser. No. 537,690, now Patent No. 3,422,059, dated Jan. 14, 1969. Divided and this application Mar. 7, 1968, Ser. No. 736,865
Claims priority, application Great Britain, May 3, 1965, 18,516/65
Int. Cl. C07c *69/76*
U.S. Cl. 260—473 R 4 Claims

Phenolic esters having antioxidant properties are disclosed. The esters are diol dialkanoates. Typical examples are decamethylene diol di-[bis-(3,5-di-tert-butyl-4-hydroxyphenyl) acetate], and hexamethylene diol di-[bis-(3,5-di-tert-butyl-4-hydroxyphenyl) acetate].

3,639,448
PROCESS FOR PRODUCING BIS(β-HYDROXYETHYL)-TEREPHTHALATE AND/OR PREPOLYMER THEREOF
Katsuto Matsuzawa and Kazuo Matsui, Tokyo, Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan
Filed Dec. 21, 1967, Ser. No. 692,524
Claims priority, application Japan, Dec. 30, 1966, 42/85,798
Int. Cl. C07c *69/82*
U.S. Cl. 260—475 P 5 Claims

An improvement of process for producing bis(β-hydroxyethyl)-terephthalate from terephthalic acid and ethylene glycol in which terephthalic acid dissolved or dispersed in a liquid, which is an alkyl terephthalate and/or bis(β-hydroxyethyl)-terephthalate is reacted with ethylene glycol at a temperature above the dew point of ethylene glycol.

3,639,449
PROCESS FOR MANUFACTURE OF ESTERS OF CARBOXYLIC ACIDS
Taiseki Kunugi, Tokyo, Japan, assignor to Mitsui Petrochemical Industries, Ltd., and Taiseki Kunugi, both of Tokyo, Japan, fractional part interest to each
No Drawing. Filed Mar. 14, 1968, Ser. No. 712,925
Claims priority, application Japan, Mar. 18, 1967, 42/16,718; Mar. 27, 1967, 42/18,626
Int. Cl. C07c *69/54, 69/80*
U.S. Cl. 260—475 N 15 Claims

A new process for the manufacture of esters of carboxylic acid to commercial and technical advantage by catalytically reacting a wide range of alcohols, their mixtures, or mixtures consisting of these alcohols or their mixtures and aldehydes in the copresence of molecular oxygen in the presence of a catalyst selected from the group consisting of metals of Group 8 of the periodic table having an atomic number from 44 to 78, oxides of these metals, pretreated products of these metals and pretreated products of these metal oxides, with the proviso that when alcohols alone are reacted with molecular oxygen, at least one primary alcohol should be present in said alcohols.

3,639,450
PURIFICATION OF BIS-HYDROXYALKYL ESTERS OF BENZENE DICARBOXYLIC ACIDS USING HYPOPHOSPHOROUS OR ORTHOPHOSPHOROUS ACID AND A GROUP VIII CATALYST
Lita L. Koh and Enrique R. Witt, Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.
No Drawing. Filed May 29, 1968, Ser. No. 732,818
Int. Cl. C07c *69/82*
U.S. Cl. 260—475 PR 12 Claims

A process for treating impure bis-hydroxyalkyl esters of benzene dicarboxylic acids by treating a hypophosphorous or orthophosphorous acid-containing aqueous solution of the diester with a catalyst of a Group VIII metal. This treatment reduces the amount of impurities comprised of hydroxyalkyl esters of carboxybenzaldehyde.

3,639,451
PROCESS FOR ESTERIFYING AROMATIC CARBOXYLIC ACIDS
David A. Ebert, Cheektowaga, N.Y., assignor to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Mar. 25, 1968, Ser. No. 715,550
Int. Cl. C07c *69/78, 69/82*
U.S. Cl. 260—475 R 10 Claims

This specification discloses a novel process for esterifying aromatic carboxylic acids whereby the carboxylic

acid is heated with a mixture containing at least a stoichiometric amount of a saturated orthoester of an aliphatic alcohol having from 1 to 8 carbon atoms and a stoichiometric excess of a lower saturated alcohol in the presence of a strong acid catalyst. This process improves the rate of esterification and eliminates colored by-products. The process is particularly suitable for the esterification of partially esterified alkyl terephthalates to dialkyl terephthalates of high purity, as evidenced by a lack of colored by-products.

3,639,452

PHENOL PROCESS

Edwin J. Strojny, Midland, Mich., and William D. Gurowitz, Ithaca, N.Y., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 26, 1968, Ser. No. 715,967

Int. Cl. C07c *69/78, 39/04*

U.S. Cl. 260—476 R 4 Claims

Less tar is produced in the copper catalyzed oxidation of benzoic acid to phenyl benzoate when at least ten percent by weight each of benzoic acid and benzoic anhydride is present in the reaction mixture. Preferably, a magnesium compound is also present as a reaction promoter.

3,639,453

2-HYDROXY AND 2 - CARBAMYLOXY DERIVATIVES OF 1,1,1-TRICHLORO-3-CARBAMYLOXYALKANES

Laszlo L. Darko, Yorktown Heights, N.Y., assignor to Ciba-Geigy Corporation

No Drawing. Continuation-in-part of application Ser. No. 786,750, Dec. 24, 1968. This application Apr. 2, 1970, Ser. No. 25,282

Int. Cl. C07c *125/06*

U.S. Cl. 260—482 B 13 Claims

1,1,1-trichloro-2-hydroxy - 3 - carbamyloxyalkanes and their 2-carbamyloxy derivatives such as 1,1,1-trichloro-2-hydroxy-3-carbamyloxypropane, 1,1,1-trichloro - 2 - hydroxy-3-carbamyloxybutane and 1,1,1-trichloro-2,3-dicarbamyloxybutane are depressants of the central nervous system and useful as muscle relaxants.

3,639,454

BENZYL ESTERS OF N-PERFLUORO METHYL CARBAMATE

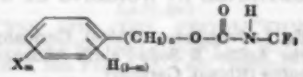
Sidney B. Richter, Chicago, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

No Drawing. Filed July 17, 1968, Ser. No. 745,404

Int. Cl. C07c *125/06*

U.S. Cl. 260—482 C 6 Claims

This invention discloses new chemical compounds of the formula



wherein X is selected from the group consisting of alkyl, alkoxy, halogen and dialkylamino; *m* is an integer from 0 to 5; and *n* is an integer from 1 to 3. This invention further discloses new pesticidal compositions which comprise an inert carrier and a pesticidal amount of a compound of the above description.

3,639,455

PRODUCTION OF HYDROXYETHYLENE-CARBAMATE ETHERS

Harro Petersen and Klaus-Christian Renner, Frankenthal, Pfalz, and Hans Diem, Mannheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed July 31, 1968, Ser. No. 748,912

Claims priority, application Germany, Aug. 5, 1967, P 16 43 635.4

Int. Cl. C07c *125/04*

U.S. Cl. 260—482 C 8 Claims

Production of hydroxyethylenecarbamate ethers by the reaction of ethylene glycol monoethers with urea in the presence of nickel salts. The products are valuable starting materials for the production of textile finishes.

3,639,456

PREPARATION OF ETHER ESTERS OF CARBOXYLIC ACIDS

Robert A. Dombro, Chicago, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Feb. 5, 1968, Ser. No. 702,799

Int. Cl. C07c *69/66*

U.S. Cl. 260—484 R 12 Claims

Ether esters of carboxylic acids are prepared by treating a lactone with a borate ester in the presence of an acidic catalyst to prepare the desired ether ester of the carboxylic acid.

3,639,457

N-SUBSTITUTED-β-OXYBUTYRAMIDE SEMISUCCINATE AND ITS SALT HAVING EFFECTS OF INCREASING PARADOXICAL SLEEP AND TRANQUILLIZING

Akira Sakuma, 5–7 Zaimokuza, 6-chome, Kamakura-shi, Japan; Shizuo Torii, 16–18 Omori Nishi, 4-chome, Ota-ku, Tokyo, Japan; and Isamu Yanagisawa, 731 Otagaya, Tsurugashima-machi, Irima-gun, Japan

Filed Apr. 19, 1968, Ser. No. 722,749

Claims priority, application Japan, May 15, 1967, 42/30,710

Int. Cl. C07c *103/34*

U.S. Cl. 260—485 J 5 Claims

N-substituted - β - oxybutyramide semisuccinate and its salt having effects of increasing paradoxical sleep and tranquillizing, and their utilizations.

3,639,458

CATALYTIC OXIDATIVE DEHYDROGENATION OF ESTERS

Robert W. Etherington, Pennington, and Koei-Liang Liauw, Clark, N.J., assignors to Mobil Oil Corporation

No Drawing. Filed Mar. 22, 1968, Ser. No. 715,188

Int. Cl. C07c *69/54*

U.S. Cl. 260—486 D 6 Claims

Esters having at least one pair of hydrogen atoms on the alpha and beta carbon atoms of the acid portion are oxidatively dehydrogenated to the corresponding ethylenically unsaturated ester by contacting the ester and molecular oxygen-containing gas with a catalyst containing gold metal in the vapor phase (400–750° C.). The gold may be on a support. The unsaturated ester products can be polymerized and copolymerized to thermoplastic polymers useful for making extruded or molded shapes.

3,639,459

METHOD OF PREPARING POLYMERIZABLE MONOMERIC ESTERS

Joseph S. Nissan, Watertown, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

No Drawing. Filed Apr. 24, 1968, Ser. No. 723,890

Int. Cl. C07c *69/54*

U.S. Cl. 260—486 R 10 Claims

Monomeric diesters of glycols and α,β-unsaturated carboxylic acids are prepared by reacting the glycol and an excess of acid in a solvent-free system in the presence of an acid catalyst and polymerization inhibitor at a temperature not exceeding about half the boiling point of the acid. The crude reaction product obtained is neutralized and purified by treatment with a relatively concentrated aqueous solution of an alkali metal hydroxide.

3,639,460

ESTERIFICATION OF METHACRYLIC ACID

Franz Wenzel, Darmstadt, and Karl Heinz Riemann, Darmstadt-Eberstadt, Germany, assignors to Rohm Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

No Drawing. Filed July 3, 1968, Ser. No. 742,149

Claims priority, application Germany, July 11, 1967, R 46,448

Int. Cl. C07c *69/54*

U.S. Cl. 260—486 R 1 Claim

Improved method for continuously esterifying methacrylic acid by introducing equivalent amounts of the acid and esterifying alcohol into a sump phase in a column at, at most, a rate equal to the rate of formation of ester, and removing the ester in azeotropic admixture with water. The sump phase initially comprises methacrylic acid and a sulfuric and/or sulfonic acid catalyst.

3,639,461

PROCESS FOR THE PREPARATION OF α,β-UNSATURATED MONOCARBOXYLIC ACID ESTERS

Hiroo Ito and Kaoru Kimura, Nagoya, Japan, assignors to Toa Gosei Chemical Industry Co. Ltd., Tokyo, Japan

No Drawing. Filed July 31, 1968, Ser. No. 748,909

Claims priority, application Japan, Aug. 17, 1967, 42/52,433; Oct. 17, 1967, 42/62,313

Int. Cl. C07c *69/54*

U.S. Cl. 260—486 R 6 Claims

The alkyl ester of an α,β-unsaturated monocarboxylic acid, is prepared by the vapor-phase esterification of the corresponding monocarboxylic acid and an aliphatic monohydric alcohol having from 1 to 8 carbon atoms in the presence of a catalyst, such as a titanium oxide catalyst, a titanium-antimony-oxygen catalyst, a titanium-silicon-oxygen catalyst, and a titanium-antimony-silicon-oxygen catalyst.

3,639,462

13,14-SECO-1,2,3,4-TETRAHYDRO-PHENANTHRENES

William McCrae, Los Altos, John H. Fried, Palo Alto, and John A. Edwards, Los Altos, Calif., assignors to Syntex Corporation, Panama, Panama

No Drawing. Filed Mar. 18, 1968, Ser. No. 714,007

Int. Cl. C07c *61/28, 61/32*

U.S. Cl. 260—488 B 12 Claims

New 13,14-seco-13,14-oxido-, 13,14-seco-13,14-methylene-, 13,14-seco-13,14-dichloromethylene- and 13,14-seco-13,14-difluoromethylene - 1,2,3,4-tetrahydrophenanthrene-2-carboxylic acids and derivatives thereof having estrogenic activity.

3,639,463

15(R)-PGE_1 AND RELATED COMPOUNDS

John E. Pike and William P. Schneider, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed May 22, 1968, Ser. No. 731,314

Int. Cl. C07c *61/36, 69/08*

U.S. Cl. 260—488 R 5 Claims

The invention relates to three new prostanoic acid derivatives, 15(R)-PGE_1, 15(R)-PGE_1 15-formate, and 15(S)-PGE_1 15-formate, and to methods for producing those. 15(R)-PGE_1 is useful as a smooth muscle stimulator. 15(S)-PGE_1 15-formate is useful to inhibit blood platelet aggregation. 15(R)-PGE_1 15-formate is used to make 15(R)-PGE_1.

3,639,464

ALPHA-(p-HYDROXYPHENYL) CUMIC ACIDS AND ESTERS

Bryce C. Oxenrider, Florham Park, and Morton H. Litt and Ferdinand M. Slavik, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Original application Aug. 17, 1964, Ser. No. 389,849, now Patent No. 3,398,121, dated Aug. 20, 1968. Divided and this application Mar. 19, 1968, Ser. No. 735,942

Int. Cl. C07c *65/14*

U.S. Cl. 260—520 2 Claims

This invention relates to a novel class of hydroxy substituted aromatic acids which includes alpha-(hydroxyphenyl) cumic acid and substituted derivatives thereof. These hydroxy substituted aromatic acids can be employed as starting materials in the preparation of useful polyesters.

3,639,465

PURIFICATION OF AROMATIC POLYCARBOXYLIC ACIDS BY CATALYTIC REDUCTION USING PREHUMIDIFIED HYDROGEN

George P. Olsen, Highland, Ind., and Philip H. Towle, Chicago, and Richard H. Baldwin, Oak Lawn, Ill., assignors to Standard Oil Company, Chicago, Ill.

Continuation-in-part of application Ser. No. 456,218, May 17, 1965. This application June 18, 1968, Ser. No. 737,875

Int. Cl. C07c *51/42*

U.S. Cl. 260—525 6 Claims

Use of prehumidified hydrogen-containing gas for purification of aromatic polycarboxylic acids contaminated with reducible impurities including aldehydic aromatic acids in processes including the step of contacting aqueous solution substantially saturated with impure aromatic polycarboxylic acid and hydrogen with noble metal-containing catalyst by percolation of the solution through a bed of the catalyst.

3,639,466

PRODUCTION OF ACRYLIC ACID FROM RESIDUES OBTAINED IN WORKING UP ACRYLIC ACID

Otto Leichtle, Ludwigshafen (Rhine), Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Mar. 27, 1968, Ser. No. 716,295

Claims priority, application Germany, Apr. 3, 1967, P 16 18 129.6

Int. Cl. C07c *57/04*

U.S. Cl. 260—526 W 8 Claims

An improved process for the production of acrylic acid by heating residues containing acryloylhydracrylic acid, β-acetoxypropionic acid, hydracrylic acid, dihydracrylic

acid and polymerized hydracrylic acids, such as are obtained in working up acrylic acid, at temperature of from 130° to 250° C. in the presence of catalysts, the improvement consisting in using a catalyst a compound containing a secondary or tertiary amino group, or a tertiary phosphine. Acrylic acid, as such and in the form of its esters, is used for the production of polymers.

3,639,467

METHOD OF RECOVERING GLUTAMIC ACID FROM A FERMENTATION BROTH

Toshiaki Nagai and Isao Yamaura, Kawasaki-shi, Kanagawa-ken, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 675,802, Oct. 17, 1967. This application Apr. 2, 1968, Ser. No. 718,192
Claims priority, application Japan, Nov. 1, 1966, 41/72,179
Int. Cl. C07c 99/12
U.S. Cl. 260—527 N 3 Claims

The mother liquor obtained after crystallization of glutamic acid from a fermentation broth at pH 3.2 is passed over a column of a strongly acidic cation exchange ion, preferably in the H-form, which adsorbs the residual glutamic acid from the mother liquor. The glutamic acid is eluted from the resin by another batch of the fermentation broth having a pH of 5 or higher, and the broth, thus enriched with glutamic acid, is adjusted to a pH near 3.2 to induce crystallization of glutamic acid. The mother liquor obtained after separation from the crystals is passed over the ion exchange column. Glutamic acid is thus recovered almost completely from the broth.

3,639,468

PROCESS FOR PREPARING AMPHOTERIC SURFACE ACTIVE AGENTS

Noburo Hayashi, Mamoru Katsumi, Yuzuru Ogata, Sumio Arai, Yoshiaki Kurita, and Yoshihiro Inamori, Wakayama-shi, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

No Drawing. Filed July 30, 1968, Ser. No. 748,633
Claims priority, application Japan, Nov. 1, 1967, 42/49,391
Int. Cl. C07c 101/20, 101/30
U.S. Cl. 260—534 E 6 Claims

A process for preparing N-alkyl N-hydroxyethyl-β-aminoethoxyacetic acid or N-alkyl N,N-bis (ethoxyacetic acid) in which a diethanolalkylamine is reacted with monochloracetic acid or its alkali metal salts, either

(1) In a substantially anhydrous condition after substituting the active hydrogen of the diethanolalkylamine with an alkali metal, or

(2) In the presence of a caustic alkali in an amount sufficient to neutralize the generated HCl in a substantially anhydrous condition.

3,639,469

PROCESS FOR THE PRODUCTION OF 4,4'-BIPHENYL DISULFONYL CHLORIDE

Shigeto Suzuki, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed May 1, 1968, Ser. No. 725,951
Int. Cl. C07c 143/70
U.S. Cl. 260—543 R 11 Claims

At elevated temperature carbon tetrachloride in the liquid phase reacts with 4,4'-biphenyl disulfonic acid to yield disulfonyl chloride. Sulfuric, phosphoric and polyphosphoric acids catalyze the reaction at a temperature in the range 130 to 225° C.

3,639,470

PROCESS FOR THE PRODUCTION OF MIXED CARBOXYLIC-SULFONIC ACID CHLORIDE DERIVATIVES OF BENZENE

Shigeto Suzuki, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed May 1, 1968, Ser. No. 725,950
Int. Cl. C07c 51/58
U.S. Cl. 260—544 R 5 Claims

Mixed acid chlorides of the formula

$$XC_6H_3(SO_2Cl)(COCl)$$

are prepared by the reaction of the corresponding diacid with carbon tetrachloride. Relative to each other, the acid groups must be of the meta orientation. The use of a strong mineral acid catalyst, an elevated reaction temperature and a pressure sufficient to maintain carbon tetrachloride in the liquid phase are necessary conditions.

3,639,471

PROCESS FOR THE PREPARATION OF SULFENYLATED CARBAMIC ACID FLUORIDES

Erich Klauke, Odenthal-Hahnenberg, and Engelbert Kuhle, Bergedorf, Gladbach, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 3, 1968, Ser. No. 742,176
Claims priority, application Germany, July 5, 1967, F 52,861
Int. Cl. C07c 51/58, 101/10, 125/00
U.S. Cl. 260—544 C 20 Claims

Reacting N-mono-(substituted- and unsubstituted-aliphatic, e.g. lower alkyl; -cycloaliphatic, e.g. C_{5-6} cycloalkyl; and -aromatic, e.g. phenyl and halo-, nitro-, lower alkyl-, lower alkoxy-, lower alkylmercapto- and/or trifluoromethyl-phenyl)-substituted carbamic acid fluoride with (substituted- and unsubstituted-alkyl, e.g. haloalkyl; and -aryl, e.g. halo-, alkyl- and/or nitro-aryl, especially -phenyl)-sulfenic acid chloride or sulfur dichloride or disulfur dichloride, in the presence of a tertiary amine as acid binding agent, e.g. at a temperature of about 0–100° C., optionally in the presence of an inert organic solvent, using about one mol of the carbamic acid fluoride per mol of said sulfenic acid chloride or at least two mols per mol of the sulfur dichloride or disulfur dichloride, to form the corresponding aforesaid N-(substituted- and unsubstituted-aliphatic, -cycloaliphatic and -aromatic)-N-[(substituted- and unsubstituted-alkyl and -aryl)-sulfenyl]-carbamic acid fluoride and bis[(N-substituted- and unsubstituted-aliphatic, -cycloaliphatic or -aromatic]-N-fluorocarbonyl)-amino]-sulfide and -disulfide, which are particularly new compounds which possess arthropodicidal, e.g. insecticidal and acaricidal, as well as fungicidal properties, and which may be used as intermediates in organic synthesis.

3,639,472

PROCESS FOR THE HYDROLYTIC SPLITTING OF CARBOXYLIC ACID VINYL ESTERS INTO ACETALDEHYDE AND CARBOXYLIC ACID

Kurt Sennewald, Knapsack, near Cologne, Alexander Ohorodnik, Liblar, and Hans-Joachim Hardel, Bruhl-Vochem, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

Filed Mar. 11, 1969, Ser. No. 806,116
Claims priority, application Germany, Mar. 30, 1968, P 17 68 095.4
Int. Cl. C07c 45/00, 51/00
U.S. Cl. 260—541 5 Claims

Carboxylic acid vinyl esters are hydrolytically split into acetaldehyde and carboxylic acid in liquid phase, at 50–120° C., and in contact with an organic sulfonic or phosphonic acid and a mercury salt thereof as the catalyst.

3,639,473

ACETIC DIPHENYLPHOSPHINIC ANHYDRIDE AND METHOD OF PREPARING SAME

David L. Venezky, Alexandria, Va., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Mar. 15, 1968, Ser. No. 713,299
Int. Cl. C07f 9/30
U.S. Cl. 260—545 P 7 Claims

Acetic diphenylphosphinic anhydride is prepared by dissolving diphenylphosphinic acid in a large excess of acetic anhydride under heating to form a solution at a temperature of about 50 to 60° C. The mixed anhydride is isolated by flash evaporation of the excess acetic anhydride and the acetic acid from the reaction solution. Higher yields of the mixed anhydride are obtained when a mixture of the diphenylphosphinic acid and a large excess of acetic anhydride are heated to a reflux temperature of about 140° C. in the presence of an added small amount of acetic acid which is sufficient to repress disproportionation of the mixed anhydride at temperatures of about 100° C. and higher up to the reflux temperature.

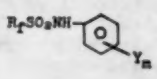
3,639,474

N-SUBSTITUTED PERFLUOROALKANE-SULFONAMIDES

Joseph Kenneth Harrington, Edina, Donald C. Kvam, North Oaks, Arthur Mendel, Vadnais Heights, and Jerry E. Robertson, North Oaks, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Continuation-in-part of application Ser. No. 588,338, Oct. 21, 1966. This application June 12, 1969, Ser. No. 832,829
Int. Cl. C07c 143/74, 121/52, 133/02
U.S. Cl. 260—556 F 10 Claims

N-substituted perfluoroalkanesulfonamides of the formula:



wherein R_f is a perfluoroalkyl group containing one to four carbon atoms, each Y is a non-cyclic group which can contain only carbon, hydrogen, oxygen, sulfur, nitrogen and halogen and *m* is 1–5, provided that all of the Y groups together contain not more than about twenty carbon atoms and that at least one of the Y groups contains a heteroatom selected from oxygen, sulfur, nitrogen and halogen. Also included are salts of these compounds, compositions containing the compounds of the present invention and processes for their preparation and use. The compounds are active as herbicides and plant growth modifiers.

3,639,475

SUBSTITUTED 5-HALO-3-PHENYLSALICYL-ANILIDES

Jack D. Early, Bethesda, and John P. Chupp, Kirkwood, Md., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Application Aug. 8, 1967, Ser. No. 659,040, now Patent No. 3,525,766, which is a division of application Ser. No. 495,678, Oct. 13, 1965, now Patent No. 3,382,145. Divided and this application Nov. 10, 1969, Ser. No. 871,311
Int. Cl. C07c 103/30
U.S. Cl. 260—559 S 3 Claims

Compounds characterized by a 5-halo-3-phenylsalicylanilido nucleus, the anilido group of which having substituents of the group nitro, cyano and trifluoromethyl. These compounds are useful as gastropodicides.

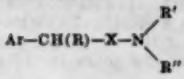
3,639,476

SUBSTITUTED 1-DIMETHYLAMINO PENTANES AND HEPTANES

Jeannie Eberle, Chatou, Micheline Sergan, Clamart, Claude Fauran, Paris, and Gerard M. Huguet, Malesherbes, France, assignors to Delalande S.A., Courbevoie, Hauts-de-Seine, France

No Drawing. Filed Nov. 29, 1967, Ser. No. 686,722
Claims priority, application Great Britain, Dec. 13, 1966, 55,671/66
Int. Cl. C07c 87/28
U.S. Cl. 260—563 4 Claims

Compounds of the formula



in which

Ar is H or an aromatic which may be mono- or polysubstituted or a heterocyclic,

R is an aliphatic having 1–5 carbon atoms,

X is —CO or —CH_2,

R′ and R″ are each H an aliphatic having 1–3 carbon atoms or

is a heterocyclic.

The compounds possess cardiovascular, diuretic and spasmolytic properties.

3,639,477

NOVEL PROPOXYGUANIDINE COMPOUNDS AND MEANS OF PRODUCING THE SAME

Yvon J. L'Italien, Plymouth, Mich., assignor to Parke, Davis & Company, Detroit, Mich.

No Drawing. Continuation-in-part of application Ser. No. 420,439, Dec. 22, 1964. This application June 17, 1968, Ser. No. 737,286
Int. Cl. C07c 129/00
U.S. Cl. 260—564 A 3 Claims

The novel free base 3-(p-fluorophenoxy)propoxyguanidine and its acid salts are prepared by reacting 3-(p-fluorophenoxy)propoxyamine with an acid addition salt of a reactive guanidine compound Z—C(NH_2)=NH, where Z is an alkoxy or alkyl thio group or a triazolyl group or similar heterocyclic displaceable group. The products are pharmacological agents having anoretic and depressant properties.

3,639,478

N,N-ALKYLENEBIS[2-LOWER ALKOXY) - 2-SUBSTITUTED-ALKANAMIDINES] AND THEIR PREPARATION

Denis M. Bailey, Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

No Drawing. Filed June 24, 1968, Ser. No. 739,193
Int. Cl. C07c 123/00
U.S. Cl. 260—564 R 6 Claims

A 2-(lower-alkoxy)-2-phenylalkanamidine, having hypoglycemic activity, or an N,N″-alkylenebis[2-(lower-alkoxy)-2-phenylalkanamidine], having antibacterial activity, are respectively prepared by reacting a lower-alkyl 2-(lower-alkoxy)-2-phenylalkanimidate with a monoamine or diamine or by reacting a 2-(lower-alkoxy)-2-phenylalkanenitrile with two molar equivalent quantities of a monoamine. The intermediate lower-alkyl 2-(lower-alkoxy)-2-phenylalkanimidate as the hydrohalide is prepared by reacting the corresponding 2-(lower-alkoxy)-2-phenylalkanenitrile with a lower-alkanol in the presence of ethereal hydrogen halide. The intermediate 2-(lower-alkoxy)-2-phenylalkanenitrile is prepared preferably by first reacting a benzaldehyde with a tri-(lower-alkyl) orthoformate to form the aldehyde di-(lower-alkyl)

acetal, reacting the latter with an acyl halide to form the corresponding α-halobenzyl lower-alkyl ether and reacting said ether with an alkali cyanide to yield said intermediate nitrile.

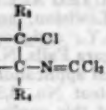
3,639,479

PROCESS FOR THE PREPARATION OF 2-CHLOROALKYL ISOCYANIDE DICHLORIDES IN ADDITION TO DICHLOROALKANES

Dieter Arlt, Cologne-Buccheim, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Mar. 7, 1968, Ser. No. 711,219
Claims priority, application Germany, Apr. 7, 1967, F 52,056
Int. Cl. C07c *119/00*
U.S. Cl. 260—566 D 5 Claims

Production of 2-chloroalkyl-isocyanide dichlorides having the formula

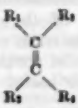


in which R_1 to R_4 each individually is a radical selected from the group consisting of hydrogen, alkyl, alkenyl, cycloalkenyl, aryl, with the proviso that two of such radicals when taken together with the

group form a member selected from the group consisting of an alicyclic ring moiety containing said

group and such alicyclic ring moiety containing both said

group and an —SO_2— group, and such R_1 to R_4 members which are substituted with substituents selected from the group consisting of NO_2, halo —N=CCl_2 and alkoxy, in addition to dichloroalkanes, which comprises reacting an olefin having the formula



in which R_1 to R_4 each individually is a radical selected from the group consisting of hydrogen, alkyl, alkenyl, cycloalkenyl, aryl, with the proviso that two of such radicals when taken together with the >C=C< group form a member selected from the group consisting of an alicyclic ring moiety containing said >C=C< group and such alicyclic ring moiety containing both said >C=C< group and an —SO_2— group, and such R_1 to R_4 members which are substituted with substituents selected from the group consisting of NO_2, halo —N=CCl_2 and alkoxy, with at most that quantity of a chlorinating agent selected from the group consisting of chlorine and sulfuryl chloride which is required for satisfying one olefinic double bond and with at least the stoichiometrically necessary quantity of cyanogen chloride at a temperature substantially between about −30 to +50° C., whereby to form the corresponding 2-chloroalkyl-isocyanide dichloride;

the reaction optionally being carried out at elevated pressure and/or in the presence of an inert organic solvent;

such compounds being novel when at least one of the radicals R_1 to R_4 does not represent hydrogen; and

all of said compounds being usable as intermediates for preparing plastics auxiliaries, or directly for preparing isocyanates and in turn by conversion of such isocyanates with amines for preparing ureas in known manner, or as plant protection agents per se.

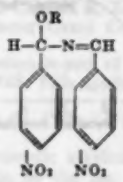
3,639,480

NOVEL ALKOXY-SUBSTITUTED SCHIFF BASES

Anne-Marie W. Kubanek, Basking Ridge, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Apr. 4, 1969, Ser. No. 813,703
Int. Cl. C07c *119/00*
U.S. Cl. 260—566 F 5 Claims

Novel compounds of the structure:



wherein R is a C_1 to C_3 alkyl radical, are obtained by reacting para-nitrobenzaldehyde with alcohol and ammonium acetate. These compounds have insecticidal and nematocidal properties.

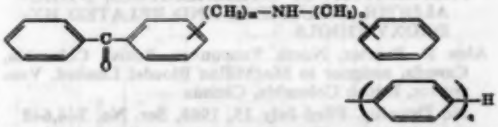
3,639,481

ARYL- AND ARALKYL-AMINOBENZOPHENONES

John Edwin Innes, Bridgewater Township, Somerset County, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed May 16, 1968, Ser. No. 729,520
Int. Cl. C07c *87/48*
U.S. Cl. 260—570 10 Claims

Compounds of the formula:



in which *m* and *n* are each separately 0 to 4, inclusive and the sum of *m* and *n* is at least 1, *q* is from 1 to 4 inclusive, and the bonds to each of the benzophenone moiety and the polyphenylene moiety is in the 3 or 4 position are a new class of compounds which are useful in solid solution in a plastic matrix as photochromic materials, in which the color changes when subject to an activating radiation. Instead of benzophenones, xanthones and triphenylenes are also disclosed.

3,639,482

PREPARATION OF FLUOROANILINES

John W. Churchill, Mount Carmel, Ehrenfried H. Kober, Hamden, and Peter H. Scott, Guilford, Conn., assignors to Olin Mathieson Chemical Corporation

No Drawing. Filed Mar. 5, 1969, Ser. No. 804,692
Int. Cl. C07c *85/10*
U.S. Cl. 260—580 5 Claims

Fluoroanilines are prepared by the deoxygenation and hydrofluorination of the corresponding nitrobenzenes which are reacted in anhydrous hydrogen fluoride at 0° to 230° C. under pressures of from 15 to 1500 p.s.i.a. in the presence of carbon monoxide and a noble metal catalyst.

3,639,483

METHOD OF PRODUCING 2,4-DIHYDROXYBENZOPHENONE AND THE DERIVATIVES THEREFROM

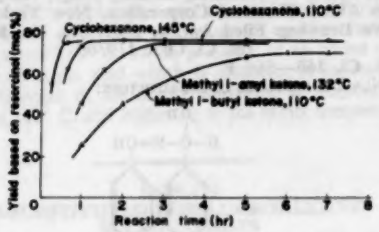
Hirohisa Shioda, Isamu Namiki, and Hisako Hori, Yokohama, and Yoshihisa Katsuyama, Zushi, Japan, assignors to The Furukawa Electric Company Limited, Tokyo, Japan

Filed July 8, 1968, Ser. No. 743,169

Claims priority, application Japan, July 11, 1967, 42/44,598; May 17, 1968, 43/33,217

Int. Cl. C07c 49/82

U.S. Cl. 260—591 4 Claims



2,4-dihydroxybenzophenone is prepared by reacting resorcinol with benzotrichloride in a mixed solvent of water and a water-miscible organic solvent such as a lower aliphatic alcohol at 10° to 90° C. 2-hydroxy-4-alkoxybenzophenone is prepared by reacting 2,4-dihydroxybenzophenone, produced by the above process, with an alkyl halide in saturated ketone having six or more carbon atoms and containing an alkali carbonate or with an alkyl ester of benzenesulfonic acids in an aqueous alkaline solution.

3,639,484

PREPARATION OF 1-THIOALDITOLS, 1-THIOALDITOL DISULFIDES AND RELATED HYDROXY THIOLS

Alan R. Procter, North Vancouver, British Columbia, Canada, assignor to MacMillan Bloedel Limited, Vancouver, British Columbia, Canada

No Drawing. Filed July 15, 1968, Ser. No. 744,648

Int. Cl. C07c 149/06, 149/12

U.S. Cl. 260—608 6 Claims

The invention is concerned with the preparation of 1-thioalditols, 1-thioalditol disulfides and related hydroxy thiols by treating solutions of sugar aldoses or ketoses with hydrogen sulfide in the presence or absence of various bases or basic salts.

3,639,485

ANTI-OZONANT

Roland Nast, Cologne-Buchheim, Kurt Ley, Leverkusen, Wolfgang Redetzky, Opladen, and Theo Kempermann, Cologne-Lindenthal, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 16, 1968, Ser. No. 745,091

Claims priority, application Germany, Feb. 5, 1968, F 54,738

Int. Cl. C07c 149/00, 43/18

U.S. Cl. 260—609 R 19 Claims

[Cyclohexen-(3)-ylidene-methyl]-hydrocarbon ethers and thioethers and their corresponding 2,5-endomethylene derviatives, preparation thereof and their use as anti-ozonants.

3,639,486

TREATMENT OF CUMENE HYDROPEROXIDE FOR USE IN EPOXIDATION REACTIONS

Rudolph Rosenthal, Broomall, Pa., Ming Nan Sheng, Cherry Hill, N.J., and John G. Zajacek, Strafford, Pa., assignors to Atlantic Richfield Company, Philadelphia, Pa.

No Drawing. Filed Dec. 15, 1967, Ser. No. 690,787

Int. Cl. C07c 73/08

U.S. Cl. 260—610 A 5 Claims

Method for the treatment of cumene hydroperoxide for use in epoxidation reactions by diluting the cumene hydroperoxide with a hydrocarbon which forms an azeotrope with water, washing the diluted cumene hydroperoxide and removing the hydrocarbon-water-azeotrope.

3,639,487

SUBSTITUTED ALLYL PHENOLS

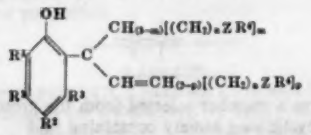
Edward D. Weil, Lewiston, and Hans L. Schlichting, Grand Island, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Original application Feb. 20, 1963, Ser. No. 260,076, now Patent No. 3,385,899, dated May 28, 1968. Divided and this application May 3, 1968, Ser. No. 736,894

Int. Cl. C07c 43/20

U.S. Cl. 260—613 R 17 Claims

Compounds of the general formula



which are useful as oxidation inhibitors, fungicides, antimicrobial agents and chemical intermediates and processes for preparing said compounds.

3,639,488

PREPARATION OF NITRO-HEXAFLUOROCUMINOLS

Stephen Joseph Kuhn, Sarnia, Ontario, Canada, assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed May 8, 1968, Ser. No. 727,736

Int. Cl. C07c 31/14

U.S. Cl. 260—618 D 7 Claims

New nitro-hexafluorocuminols are produced in the exclusive meta-nitration of the α,α-bis(trifluoro methyl) benzyl alcohols by a mixture of fuming nitric and concentrated sulfuric acids at temperatures of 0–50° C. The nitrated compounds are useful as strong acids and bactericides.

3,639,489

METHOD FOR PREPARING HEXACHLOROPHENE

Edwin B. Michaels, Gregory Court, East Norwalk, Conn. 06855

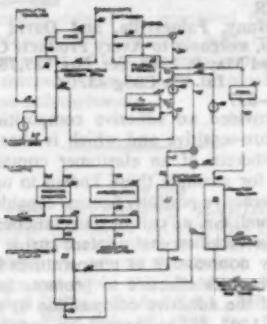
No Drawing. Continuation-in-part of application Ser. No. 644,476, June 7, 1967. This application Feb. 6, 1968, Ser. No. 703,257

Int. Cl. C07c 39/16, 37/00

U.S. Cl. 260—619 A 10 Claims

A novel process is provided for preparing hexachlorophene by admixing a lower alkyl monocarboxylic acid or the anhydride thereof with 2,4,5-trichlorophenol either in its pure or technical form and, thereafter, condensing the same with both a formaldehyde-yielding substance and an acid-condensing agent, said reactants and adjuvants being present in critically recited proportions.

3,639,490
HEPTYL PHENOL ALKYLATION
Rene P. Brown, Birt Allison, Jr., and Paul D. Meek, Big Spring, Tex., assignors to Cosden Oil & Chemical Company, Big Spring, Tex.
Filed Feb. 25, 1966, Ser. No. 529,979
Int. Cl. C07c *39/06*
U.S. Cl. 260—624 4 Claims



A C_7 heart cut of catalytic gasoline containing large quantities of olefines and cycloolefines is converted to a substantially saturated dehydroaromatization feedstock composed predominantly of C_7 paraffins and cycloalkanes while simultaneously producing highly economically a mixture of alkyl phenols by using up the olefine and cycloolefine content of the unsaturated C_7 heart cut in an alkylation reaction upon phenols.

3,639,491
OXYCHLORINATION OF 1,1,2-TRICHLOROETHANE TO TRICHLOROETHYLENE
Larry F. Wright, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed July 19, 1968, Ser. No. 745,973
Int. Cl. C07c *21/10, 17/10*
U.S. Cl. 260—654 D 4 Claims

The present invention relates to the production of trichloroethylene from 1,1,2-trichloroethane (β-trichloroethane) by passing the latter in the vapor phase over an oxychlorination catalyst in the presence of oxygen at an elevated temperature and under super-atmospheric pressure. The method of the present invention allows increased productivity per catalyst volume than heretofore disclosed by the art processes as well as greater selectivity of the β-trichloroethane to trichloroethylene per pass.

3,639,492
DEHYDROHALOGENATION OF HALOGENATED COMPOUNDS
John B. Campbell, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Feb. 28, 1968, Ser. No. 708,801
Int. Cl. C07c *21/02, 21/20*
U.S. Cl. 260—655 8 Claims

Halogen-containing organic compounds are treated with aqueous inorganic alkaline materials in the presence of a catalytic amount of a sulfonium compound to split off hydrogen halide.

3,639,493
DEHYDROHALOGENATION OF HALOGENATED COMPOUNDS
John B. Campbell, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Feb. 28, 1968, Ser. No. 712,896
Int. Cl. C07c *21/04, 21/20*
U.S. Cl. 260—655 5 Claims

Halogen-containing organic compounds are treated with aqueous inorganic alkaline material in the presence of a catalytic amount of a quaternary phosphonium compound to split off hydrogen halide.

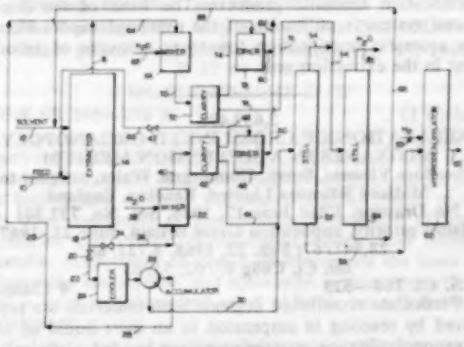
3,639,494
HYDROCARBON CHLORINATION AND ALKYLATION PROCESS
Richard E. Crocker, Anaheim, Calif., assignor to Atlantic Richfield Company, Philadelphia, Pa.
No Drawing. Filed Feb. 17, 1966, Ser. No. 528,108
Int. Cl. C07c *3/52*
U.S. Cl. 260—671 B 9 Claims

A method for reducing the production of polychlorohydrocarbons in a hydrocarbon chlorination comprising forming a solution of the hydrocarbon with a non-olefinic aprotic solvent such as benzene, halobenzenes, benzenes and naphthalenes having electron donating substituents and carbon disulfide, and passing chlorine into contact with the solution in the presence of an initiator is disclosed. The resulting monochlorohydrocarbons are particularly useful for alkylating aromatic hydrocarbons to prepare detergent alkylates.

3,639,495
CATALYTIC HYDROCRACKING PROCESS
Charles C. Brewer and Charles R. Killian, Baton Rouge, La., assignors to Foster Grant Co., Inc., Leominster, Mass.
No Drawing. Continuation-in-part of application Ser. No. 706,806, Feb. 20, 1968. This application Mar. 9, 1970, Ser. No. 17,901
Int. Cl. C07c *3/58*
U.S. Cl. 260—672 16 Claims

A feed stock of aromatic alkylation residues is subjected to hydrocracking by the use of a catalyst which may be a mixture of oxide or molybdenum and cobalt, molybdenum and nickel, or molybdenum, cobalt and nickel, and a carrier, such as alumina.

3,639,496
PROCESS FOR THE PRODUCTION OF NAPHTHALENE
George J. Rozman, Ashland, Ky., assignor to Ashland Oil, Inc., Houston, Tex.
Filed July 17, 1968, Ser. No. 745,517
Int. Cl. C07c *3/58, 7/10*
U.S. Cl. 260—674 N 19 Claims



Naphthalene is produced from hydrocarbon fractions containing substantial volumes of polycyclic aromatics, such as light cycle oils from a catalytic cracking unit, by contacting the hydrocarbon feed with an organic sulfoxide, such as dimethylsulfoxide; separating an extract phase and a first raffinate phase from one another; mixing the extract phase with water; passing the extract, solvent and water mixture to a clarifier to separate a second raffinate phase therefrom; passing this second raffinate phase to a dryer to remove water; passing clarified extract, solvent, and water to a first vacuum distillation unit to separate a solvent and water overhead from an extract bottoms; passing the bottoms from the vacuum distillation unit to a hydrodealkylation unit to produce naphthalene; mixing the first raffinate from the extractor with water; passing the mixture of first raffinate and water to a clarifier to separate the raffinate therefrom;

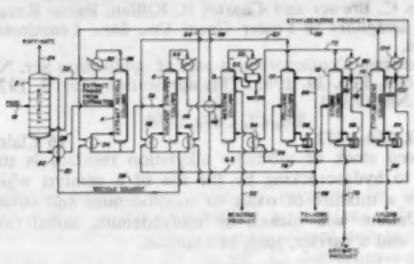
passing the first raffinate to a dryer to remove residual water therefrom; combining clarified water and solvent from the clarifier with the water and solvent from the first vacuum distillation unit; passing the combined solvent and water streams to a second vacuum distillation unit to separate the water and the solvent; and recycling the solvent to the solvent extractor.

3,639,497

EXTRACTION AND MULTI-STAGE FRACTIONAL DISTILLATION WITH INDIRECT HEAT EXCHANGE OF LIQUID AND VAPOR PROCESS AND SYSTEM FOR RECOVERING AROMATIC PRODUCTS

Eugene H. Martel, Bromley, Kent, and Gerald T. Schuch, Surrey, England, assignors to The Badger Company, Inc., Cambridge, Mass.

Filed Aug. 22, 1968, Ser. No. 754,625
Int. Cl. B01d *3/00*
U.S. Cl. 260—674 SE **6 Claims**



A system for recovering high purity aromatic products from mixed hydrocarbon feedstocks comprising an aromatic extraction unit and an aromatics fractionation unit integrated by heat exchange whereby substantial savings in operating costs are realized. The aromatics are extracted from the feedstocks by means of a selected solvent and the resulting extract is stripped to produce an aromatic-rich stream which, in turn, is fractionated into specification aromatic products. The basis of the integrated system is utilization of the overhead vapors from the aromatic fractionation towers as a source of reboil heat in the extraction unit.

3,639,498

PREPARATION OF CROSSLINKED ORGANOPOLYSILOXANES IN A SUSPENSION MEDIUM

Theodore Vlismas, Barry, Glamorgan, Wales, assignor to Midland Silicones Limited, Reading, England

No Drawing. Filed June 17, 1968, Ser. No. 737,341
Claims priority, application Great Britain, June 22, 1967, 28,941/67; Feb. 22, 1968, 8,721/68
Int. Cl. C08g *47/02, 53/08*
U.S. Cl. 260—825 **4 Claims**

Particulate crosslinked organosilicon materials are prepared by reacting in suspension in an inert liquid of an organopolysiloxane containing silicon-bonded olefinically unsaturated groups with a hydrogen substituted organopolysiloxane. Such materials having a microporous structure are suitable as a packing material in the columns of gas chromatographs.

3,639,499

POLYPHENYLENE OXIDE RESINS BLENDED WITH COUMARONE-INDENE RESINS

Hugh E. Snodgrass, Mishawaka, and Robert L. Lauchlan, Granger, Ind., assignors to Uniroyal, Inc., New York, N.Y.

No Drawing. Filed July 22, 1970, Ser. No. 57,297
Int. Cl. C08f *31/04*
U.S. Cl. 260—829 **4 Claims**

Blends of poly(phenylene ether) resins with high melting hydrocarbon resins provide thermoplastic compositions characterized by increased moduli or stiffness, and also increased tensile strength and hardness.

3,639,500

CURABLE PRESSURE SENSITIVE ADHESIVE CONTAINING A POLYEPOXIDE, A CARBOXYLATED DIENE POLYMER AND AN ACRYLIC ESTER TACKIFIER

Richard P. Muny, Painesville, and David W. Wilson, Mentor, Ohio, assignors to Avery Products Corporation

Filed May 9, 1968, Ser. No. 727,780
Int. Cl. C08g *45/04*
U.S. Cl. 260—837 **25 Claims**

There is provided an adhesive composition which is initially pressure-sensitive and which is characterized by the presence therein of an elastomer containing highly polar groups, for example those known to open or associate with the reactive portion of resins capable of forming a structural bond, e.g. a "carboxylated rubber"; an epoxy resin; a reactive tackifier; and a latent curing agent which is substantially nonreactive at temperatures below about 75° C., but becomes effective to promote interaction of components of the adhesive composition at temperatures above about 140° C. to provide a strong structural adhesive.

3,639,501

ART OF PRODUCING SHAPED, MODIFIED, CONDENSATION POLYMERS

Saunders E. Jamison, 27 Constantine Place, Summit, N.J. 07901, and Michael Dunay, 363 Midway Ave., Fanwood, N.J. 07076

No Drawing. Application Oct. 23, 1968, Ser. No. 770,898, now Patent No. 3,532,778, which is a continuation of application Ser. No. 489,401, Sept. 22, 1965. Divided and this application June 18, 1970, Ser. No. 47,609
Int. Cl. C08g *41/04*
U.S. Cl. 260—857 **3 Claims**

Extrudable liquid compositions and wet formed, e.g. filamentary material of enhanced dyeability based upon the combination with a wet formable difficultly meltable condensation polymer such as poly (polymethylene) terephthalamide of from 0.5 to 30 percent of a basic nitrogen polymer such as a vinylpyridine polymer produced with a solution thereof in a solvent therefor.

3,639,502

ANTISTATIC SHAPED ARTICLES CONTAINING POLYETHERPOLYAMIDE BLOCK COPOLYMER AND A POLYAMIDE, POLYESTER OR POLYOLEFIN

Kaoru Okazaki, Yoichi Shimokawa, and Taneo Maeda, Nagoya, Keisuke Igawa, Aichi-ken, Chikatsu Okagawa, Nagoya, and Koichi Kato, Ohtsu-shi, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed July 19, 1968, Ser. No. 746,124
Claims priority, application Japan, July 27, 1967, 42/47,905
Int. Cl. C08g *41/04*
U.S. Cl. 260—857 R **6 Claims**

A synthetic resin polymer such as polyamide, polyester and polyolefin and polyether-polyamide block copolymer are shaped in a blended condition to obtain a shaped article. In the shaped article, the block copolymer is dispersed in the form of slender particles as an independent phase wherein the longitudinal axes of the particles are arranged in parallel relationship with the direction of the molecular orientation of the shaped article. At least 80% by weight of the dispersed particles of the block copolymer have a diameter at cross section of not more than 1.0 micron and a length in the direction of longitudinal axes at least 20 times the diameter at cross section. Polymer blend shaped articles having such an internal structure have very excellent properties as a synthetic resin and also excellent antistatic properties.

3,639,503

BLOCK COPOLYCARBONATES CONTAINING POLYLACTONE BLOCKS AND CYCLOBUTYLENE POLYCARBONATE BLOCKS

Markus Matzner, Edison, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Feb. 20, 1969, Ser. No. 801,152
Int. Cl. C08f *45/32*; C08g *17/13, 39/10*
U.S. Cl. 260—860 10 Claims

This invention relates to improved block copolycarbonates containing an amorphous, soft, rubbery segment or block composed of lactone units and another crystalline, hard, thermoplastic segment of block composed of cyclobutylene polycarbonate.

3,639,504

PROCESS FOR PREPARING HARDENED POLYESTER RESINS USING MIXTURES OF ORGANIC METAL DERIVATIVES OF VANADIUM AND ZIRCONIUM AS ACCELERATORS

Teo Paleologo and Silvio Vargiu, Milan, Italy, assignors to Società Italiana Resine S.p.A., Milan, Italy

No Drawing. Filed July 10, 1968, Ser. No. 743,606
Claims priority, application Italy, July 17, 1967, 18,472/67
Int. Cl. C08f *21/02*
U.S. Cl. 260—863 5 Claims

Unsaturated polyester resins are hardened in the presence of peroxide catalysts and mixtures of organic metal derivatives of vanadium and zirconium as accelerators.

3,639,505

POLYOLEFIN FIBERS OF IMPROVED DYE RECEPTIVITY CONTAINING TOLUENESULFONAMIDES

James K. Hughes and Tsung-Yuan Su, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed May 11, 1970, Ser. No. 36,393
Int. Cl. C08f *29/10*
U.S. Cl. 260—873 16 Claims

The dyeability of polyolefin fibers and films is improved by forming a polymer alloy comprising an intimate blend of polyolefin, a minor amount of polyethylene terephthalate and from 0.2 to 5 parts per hundred parts of polymer of toluenesulfonamide compound. Shaped objects prepared from such blends have improved receptivity to disperse dyes.

3,639,506

FLAME RETARDANT COMPOSITION OF POLYPHENYLENE ETHER, STYRENE RESIN, AROMATIC PHOSPHATE AND AROMATIC HALOGEN COMPOUND

William R. Haaf, Voorhesville, N.Y., assignor to General Electric Company

Filed May 21, 1969, Ser. No. 826,579
Int. Cl. C08g *43/02*
U.S. Cl. 260—874 19 Claims

This invention is for a blend of a polyphenylene ether and a styrene resin characterized by the addition of a flame retardant combination comprising an aromatic phosphate and an aromatic halogen compound. The polyphenylene ethers are known to have excellent flame retardant properties while the styrene resins are known to have poor flame retardant properties. The admixture of a polyphenylene ether with a styrene resin destroys the flame retardancy of the polyphenylene ethers. In accordance with the present invention, it has been found that the addition of a combination of an aromatic phosphate and an aromatic halogen compound in small amounts to a blend of a polyphenylene ether and a styrene resin improves the flame retardant properties of the blend to a point where it satisfies the requirements set forth by the Underwriters' Laboratory.

3,639,507

PLASTIC PATTERN MATERIAL FOR INVESTMENT CASTING

Stuart Z. Uram, Canton, Ohio, assignor to TRW Inc., Cleveland, Ohio

No Drawing. Original application Sept. 7, 1966, Ser. No. 577,786, now Patent No. 3,465,808, dated Sept. 9, 1969. Divided and this application Jan. 21, 1969, Ser. No. 828,020
Int. Cl. C08f *29/12*; C08g *43/02*
U.S. Cl. 260—874 2 Claims

A pattern for a precision investment process, the pattern being relatively stiff and being cleanly removable from the investment mold formed therearound by steam autoclaving, the pattern consisting of a mixture of polystyrene and a water soluble ethylene oxide polymer having a molecular weight of from 100,000 to 2,000,000, the polymer constituting from 10 to 50% by weight of the mixture.

3,639,508

THERMOPLASTIC BLENDS OF POLYARYLENE OXIDE AND BLOCK POLYMER, AND METHOD FOR MAKING THEM

Roger P. Kambour, Schenectady, N.Y., assignor to General Electric Company

Filed Jan. 3, 1969, Ser. No. 788,769
Int. Cl. C08f *29/12*; C08g *43/02*
U.S. Cl. 260—876 B 29 Claims

Liquid phase blending of a polyarylene oxide and a monovinyl aromatic block polymer provides for the production of a variety of thermoplastic materials having improved heat distortion.

3,639,509

SHAPED ARTICLES ON THE BASIS OF POLYVINYL CHLORIDE

Hans-Joachim Andrascheck and Erich Zentner, Burgkirchen (Alz), Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed May 5, 1969, Ser. No. 821,994
Claims priority, application Germany, May 17, 1968, P 17 69 390.2
Int. Cl. C08f *41/12, 29/22*
U.S. Cl. 260—876 R 12 Claims

The invention relates to shaped articles on the basis of polyvinyl chloride having a high transparency, high thermal stability under load, good deep drawing properties and a high impact strength. The shaped articles consist mainly of a copolymer of predominant proportions of vinyl chloride and certain N-substituted maleic acid imides, smaller proportions of known elastomers on the basis of butadiene and styrene, and optionally, certain proportions of a graft copolymer of vinyl chloride on a butadiene elastomer.

3,639,510

REACTION OF FLUORINE WITH POLYPERFLUOROPOLYENES

T. O. Paine, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Madeline S. Toy, Fountain Valley, Calif.

No Drawing. Filed Mar. 26, 1969, Ser. No. 810,815
Int. Cl. C08f *3/20, 27/03, 29/22*
U.S. Cl. 260—877 7 Claims

Polyperfluoropolyenes such as polyperfluorobutadiene are reacted with fluorine to either provide a saturated polymer chain and/or create reactive sites on the polymer chain which is then followed by exposure to a monomeric species which undergoes free radical polymerization to graft the monomer onto the polyperfluoropolyene.

3,639,511

PROCESS FOR THE PRODUCTION OF IMPACT-RESISTANT STYRENE MIXED POLYMERS

Kurt Kreibich, Marl, Germany, assignor to Chemische Werke Huls Aktiengesellschaft, Marl, Kreis Recklinghausen, Germany

No Drawing. Filed May 21, 1965, Ser. No. 457,833

Claims priority, application Germany, June 10, 1964, P 12 47 021.2-44

Int. Cl. C08f *15/04*

U.S. Cl. 260—878 2 Claims

An improvement in the process for making impact-resistant styrene mixed polymers and the product obtained thereby wherein a terpolymer of ethylene, propylene and non-conjugated diolefins with at least 5 carbon atoms is prepared in the presence of Ziegler copolymerization catalysts and the terpolymer has 1 to 3 double bonds per 1000 carbon atoms, mixing 2 to 20 percent of the terpolymer with 98 to 80 percent of styrene in an aqueous suspension and without preliminary ozonization polymerizing the mixture.

3,639,512

PROCESS FOR PREPARING AN IMPACT RESISTANT VINYL CHLORIDE RESIN COMPOSITION

Katsumi Sugimoto and Sachio Fukui, Yokohama, Japan, assignors to The Japanese Geon Company, Ltd., Tokyo, Japan

No Drawing. Filed Apr. 10, 1967, Ser. No. 629,360

Claims priority, application Japan, Apr. 15, 1966, 41/23,504

Int. Cl. C08f *15/00, 29/24, 37/00*

U.S. Cl. 260—878 R 5 Claims

A process for preparing a vinyl chloride resin composition, characterized by polymerizing a monomer mixture of vinyl chloride and at least one monomer selected from the group consisting of alkylvinyl ether, ethylene, propylene and butene, in the presence of a copolymer of ethylene and vinyl ester or acrylic acid ester. Such vinyl chloride resin compositions per se exhibiting excellent impact strength, weatherability, heat stability and processability are also provided.

3,639,513

POLYPROPYLENE FIBERS OF IMPROVED DYEABILITY CONTAINING A TERPOLYMER OF A VINYLPYRIDINE AND ALKYL ACRYLATES OR METHACRYLATES

Kazuo Sadakata, Mitaka-shi, Minoru Sasaki, Ohtake-shi, Masahiro Hirose, Yamaguchi-ken, and Yasuo Nakamura, Yukio Mikida, Kazuo Ito, and Kuninobu Kimura, Ohtake-shi, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

No Drawing. Filed June 1, 1967, Ser. No. 642,701

Claims priority, application Japan, June 16, 1966, 41/39,107; June 17, 1966, 41/39,306; July 6, 1966, 41/44,018

Int. Cl. C08f *29/12, 33/08*

U.S. Cl. 260—878 R 5 Claims

A dyeable polypropylene fiber comprising polypropylene in admixture with a copolymer composed mainly of vinylpyridines and alkyl acrylates or alkyl methacrylates having an alkyl group containing 16 to 20 carbon atoms, and a process for dyeing said fiber characterized in that the fiber is treated with phosphite esters or alkylphenols to make the fiber excellent in fastness to light.

3,639,514

HYDROPHILIC GRAFT POLYMERS OF ETHYLENE/VINYLPYRROLIDONE COPOLYMER WITH ACRYLONITRILE GRAFTED THEREON BY POLYMERIZATION

Karl-Erwin Schnalke, Cologne-Flittard, Carlhans Suling and Heino Logemann, Leverkusen, and Raoul Resz, Cologne-Stammheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Sept. 13, 1967, Ser. No. 667,354

Claims priority, application Germany, Sept. 19, 1966, F 50,232

Int. Cl. C08f *15/22*

U.S. Cl. 260—878 1 Claim

The invention relates to new acrylonitrile graft polymers and to a process for this production, using as a graft basis a copolymer of ethylene and vinylpyrrolidone and grafting acrylonitrile thereon.

The acrylonitrile graft polymers have an improved affinity for water and, at the same time, a high softening point.

3,639,515

PREPARATION OF α-OLEFIN BLOCK COPOLYMERS

Hugh J. Hagemeyer, Jr., and Marvin B. Edwards, Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 28,826, May 13, 1960, which is a continuation-in-part of applications Ser. No. 615,775, Oct. 15, 1956, now Patent No. 3,067,183, and Ser. No. 668,840, July 1, 1957. This application Feb. 6, 1969, Ser. No. 797,246

The portion of the term of the patent subsequent to Oct. 12, 1988, has been disclaimed and dedicated to the Public

Int. Cl. C08f *1/30, 15/00*

U.S. Cl. 260—878 B 4 Claims

This invention relates to the solution polymerization of α-olefins to form block copolymers. The polymerization is conducted in the presence of a catalyst comprising titanium trichloride and a lithium component.

3,639,516

GRAFT COPOLYMERS

Gordon A. Sarfaty, Doncaster, Victoria, and Geoffrey W. Tregear, Heidelberg, Victoria, Australia, assignors to Cancer Institute Board, Melbourne, Victoria, Australia

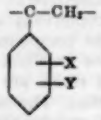
No Drawing. Filed June 23, 1969, Ser. No. 835,781

Claims priority, application Australia, July 19, 1968, 40,848/68

Int. Cl. C08f *15/00*

U.S. Cl. 260—818 R 8 Claims

A graft copolymer comprising a polymeric nucleus and surface grafted on to it copolymeric side chains comprising a multiplicity of mer units of the formula



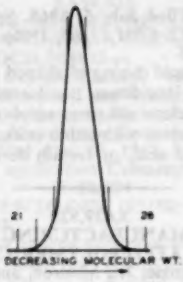
wherein X is at least one group which is reactive with carbonylic steroids and Y is one or more optional substituents which is non-reactive with carbonylic steroids characterised in that substantially the bulk of said polymeric side chains surrounds said nucleus in a thin continuous and homogeneous layer.

3,639,517

RESINOUS BRANCHED BLOCK COPOLYMERS

Alonzo G. Kitchen and Frank J. Szalla, Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Sept. 22, 1969, Ser. No. 859,861
Int. Cl. C08f *19/08*
U.S. Cl. 260—879 12 Claims



Monovinyl-substituted aromatic hydrocarbons and conjugated dienes are sequentially polymerized with multiple additions of initiator and monovinyl-substituted aromatic monomer and subsequently treated with a polyfunctional treating agent to form resinous branched block copolymers which are polymodal in regard to molecular weight distribution.

3,639,518

ANTI-STATIC POLYMER COMPOSITIONS WITH DISCOLORATION SUPPRESSORS

Thomas Ellis Davies, Barry, Glamorgan, and Hubert Brian Hopkins, Swansea, Glamorgan, Wales, assignors to Dow Chemical Company Limited, London, England

No Drawing. Filed Sept. 29, 1967, Ser. No. 671,618
Claims priority, application Great Britain, Oct. 19, 1966, 46,728/66
Int. Cl. C08f *45/56*; C09k *3/16*
U.S. Cl. 260—880 R 8 Claims

An antistatic composition for use with polystyrene, polyolefins and other hydrocarbon polymers comprising an alkanolamide of organic acid and, as discolouration suppressor, an oxide, hydroxide, carbonate, bicarbonate or carboxylate of ammonium or metals such as sodium, potassium, magnesium or calcium.

3,639,519

PROCESS FOR PREPARING BLOCK COPOLYMERS BY REACTING LACTONE WITH A POLYMER

Henry L. Hsieh, Bartlesville, Okla., and Francis X. Mueller, Jr., Louisville, Ky., assignors to Phillips Petroleum Company

No Drawing. Continuation-in-part of application Ser. No. 679,991, Nov. 2, 1967. This application May 2, 1968, Ser. No. 726,241
Int. Cl. C08f *15/04, 17/02, 19/02*
U.S. Cl. 260—880 6 Claims

A copolymer is formed by providing a polymer having at least one

group wherein M is an alkali metal such as lithium, reacting the polymer with one of an alkene oxide such as ethylene oxide, an aldehyde such as propanal, an epoxyaldehyde such as 2,3-epoxypropanal, a polyaldehyde such as 1,3,5-trioxane, a ketone such as 2-butanone, and an epoxy ketone such as 2,3-epoxy-5-hexanone, and contacting at least the reaction product thereof with at least one lactone such as epsilon-caprolactone to polymerize the lactone and form a lactone polymer block on the first provided polymer.

3,639,520

PRODUCTION OF BUTADIENE-STYRENE GRAFT COPOLYMERS WITH A NICKEL CARBOXYLIC ACID SALT OR NICKEL ORGANIC COMPLEX COMPOUND-TITANIUM TETRACHLORIDE-TRIALKYLALUMINUM CATALYST

Akira Onishi, Shiro Anzai, and Motoki Ishii, Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 474,483, July 23, 1965. This application July 2, 1968, Ser. No. 741,908
Int. Cl. C08d *1/30*; C08f *11/08*
U.S. Cl. 260—880 6 Claims

A process for manufacturing rubbery or plastic butadiene graft copolymers having a cis-1,4 content of at least 85% and substantially no gel, which comprises polymerizing butadiene, and copolymerizing styrene at a temperature of from 80° C. to 180° C., with a catalyst system consisting of (A) an organic carboxylic acid salt or an organic metal complex compound of nickel, (B) titanium tetrachloride and (C) a trialkyl aluminum.

3,639,521

POLAR COMPOUND ADJUVANTS FOR IMPROVED BLOCK POLYMERS PREPARED WITH PRIMARY HYDROCARBYLLITHIUM INITIATORS

Henry L. Hsieh, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Apr. 23, 1969, Ser. No. 818,804
Int. Cl. C08f *15/04*
U.S. Cl. 260—880 4 Claims

High raw tensile strength radial and linear block polymers are prepared by the incremental addition of monomers employing a particular sequence of addition using primary hydrocarbyllithium initiators with small amounts of polar compound adjuvants.

3,639,522

SELF-EXTINGUISHING HIGH IMPACT STYRENE POLYMERS

Munisamappa Narayana and Henno Keskkula, Midland, and Jerry E. Mason, Hemlock, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed June 4, 1969, Ser. No. 830,514
Int. Cl. C08f *29/22*
U.S. Cl. 260—880 R 3 Claims

The disclosure concerns self-extinguishing high impact styrene polymers containing dibromocarbene modified butadiene polymers.

3,639,523

BLOCK COPOLYMERS HAVING IMPROVED PHYSICAL PROPERTIES

Roy G. Hayter, Berkeley, and Eugene T. Bishop, Moraga, Calif., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Oct. 29, 1969, Ser. No. 872,385
Int. Cl. C08f *15/04, 15/40*
U.S. Cl. 260—880 8 Claims

The green strength, building tack, and high temperature properties of block copolymers are substantially improved by the presence of certain relatively low molecular weight polymer blocks of polymerizable monomers.

3,639,524

HYDROPHILIC GEL POLYMER INSOLUBLE IN WATER FROM POLYVINYLPYRROLIDONE WITH N-VINYL-2-PYRROLIDONE AND METHACRYLIC MODIFIER

Maurice Selderman, 3306 Deronda Drive, Los Angeles, Calif. 90028

No Drawing. Filed July 28, 1969, Ser. No. 845,499
Int. Cl. C08f *15/40*
U.S. Cl. 260—885 8 Claims

A plastic or resin product obtained by mixing comminuted polyvinylpyrrolidone, vinylpyrrolidone, a modifier such as an organic methacrylate, optionally a crosslinking agent, and optionally a catalyst; and causing polymerization to take place by elevating the temperature. The inventive product is insoluble in water but is hydratable with water, and may take up as much as 90% by weight of water. The hydrated product is optically transparent and especially suitable for contact lenses.

3,639,525

RAW MIXTURE OF RUBBERY ISOBUTYLENE POLYMER WITH CRYSTALLINE TRANS-1,4-CONJUGATED DIOLEFIN POLYMER

Eric G. Kent, Sarnia, Ontario, Canada, assignor to Polymer Corporation Limited

No Drawing. Filed Nov. 27, 1967, Ser. No. 685,954
Claims priority, application Canada, Dec. 14, 1966, 977,956
Int. Cl. C08d *9/08*
U.S. Cl. 260—888 4 Claims

A protective covering composition, suitable for use as an electrical tape, which comprises (A) a solid raw polymer mixture of 60–90 parts by weight of a rubbery polymer of isobutylene and (B) 40–10 parts by weight of a high molecular weight polymer of a C_4–C_8 conjugated diolefin, said diolefin polymer having at least 85% of the diolefin units in the trans-1,4 configuration, said parts being parts per 100 parts total polymer.

3,639,526

CHLORINATED VINYL CHLORIDE RESIN COMPOSITIONS

Michihiro Kameishi, Osaka, Japan, assignor to Kanegafuchi Chemical Industry Company Limited, Osaka, Japan

Continuation of application Ser. No. 622,026, Mar. 8, 1967. This application Feb. 17, 1970, Ser. No. 12,897
Claims priority, application Japan, Feb. 22, 1966, 41/10,956; Mar. 4, 1966, 41/13,472
Int. Cl. C08f *29/24;* C08d *9/08*
U.S. Cl. 260—891 1 Claim

Chlorinated vinyl chloride resin compositions comprising chlorinated vinyl chloride resins of at least 61% chlorine content mixed with vinyl chloride resins combined with or in alternation with chlorinated vinyl chloride resins, of less than 61% chlorine; and to which mixture, for other embodiments, rubbery butadiene polymers-vinyl compound interpolymers may be mixed; and methods of preparing the same.

3,639,527

POLYESTER-IONIC COPOLYMER THERMOPLASTIC MOULDING COMPOSITIONS

Ludwig Brinkmann and Walter Herwig, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Aug. 8, 1968, Ser. No. 751,030
Claims priority, application Germany, Sept. 5, 1967, P 16 94 190.5
Int. Cl. C08f *29/36;* C08g *39/10*
U.S. Cl. 260—873 13 Claims

The invention provides thermoplastic moulding compositions comprising linear saturated polyesters and ionic copolymers from which dimensionally stable shaped articles having a high impact strength can be produced.

3,639,528

DYEABLE POLYOLEFINS CONTAINING ACID SALTS OF POLYVINYLPYRIDINES

Tad L. Patton, Baytown, Tex., and Raymond R. Haynes, Laurel, Md., assignors to Esso Research and Engineering Company

No Drawing. Filed July 5, 1968, Ser. No. 742,504
Int. Cl. C08f *33/08;* D06p *3/00*
U.S. Cl. 260—895 13 Claims

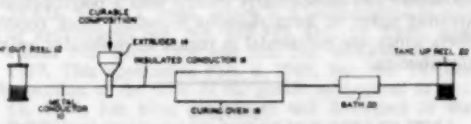
Uniform deep acid dyeing of shaped polyolefin articles, such as polypropylene fibers, is achieved by blending into the polyolefin, before shaping, vinyl pyridine polymers that have been reacted with either sulfuric acid, a sulfonic acid, a phosphoric acid, or certain derivatives thereof.

3,639,529

METHOD FOR MANUFACTURING CROSS-LINKED CHLORINATED POLYMERIC SYSTEMS

Burton T. MacKenzie, Jr., Monroe, and Joseph E. Betts, Westport, Conn., assignors to General Electric Company

Filed July 29, 1970, Ser. No. 59,095
Int. Cl. C08f *29/12*
U.S. Cl. 260—897 C 8 Claims



A chlorinated polymer is compounded with a lead salt stabilizer and a cross-linking agent, and then cured under steam pressure to effect cross-linking of the polymer. The resulting cross-linked product, bearing white surface areas or spots, is passed through a polar organic solvent, whereby the spots appearing on the surface of the cross-linked product are removed therefrom by the action of the solvent.

3,639,530

HIGH TENACITY RESINOUS PACKAGING STRAP

Daniel J. Ryan, Chester, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Original application May 27, 1965, Ser. No. 459,165. Divided and this application May 22, 1969, Ser. No. 852,957
Int. Cl. C08f *29/12*
U.S. Cl. 260—897 B 4 Claims

A high tenacity packaging strap of a monoaxially oriented mixture of isotactic polypropylene and a small amount of a metal ionized alpha-olefin/unsaturated carboxylic acid copolymer.

3,639,531

REACTIONS WITH ELEMENTAL PHOSPHORUS TO PRODUCE PHOSPHORUS ACID ESTER PRODUCTS AND THE REACTION PRODUCTS SO PRODUCED

Chisung Wu, New Brunswick, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Original application Feb. 15, 1966, Ser. No. 527,492. Divided and this application May 21, 1969, Ser. No. 826,674
Int. Cl. C07f *9/08, 9/40*
U.S. Cl. 260—920 4 Claims

Organophosphorus compositions produced by reacting (a) elemental phosphorus (b) an epoxide or an eipsulfide, and (c) an alcohol or a mercaptan, in the presence

of a catalytic quantity of a base, and thereafter reacting the product of (a), (b) and (c) with oxygen or other oxidizing agent in proportions, at a temperature and for a period of time sufficient to convert substantially all trivalent phosphorus to pentavalent phosphorus. The compositions are useful as intermediates for the production of useful surfactants and also as epoxy resin hardeners.

3,639,532

ESTERS AND/OR AMIDES OF ACIDS OF PHOSPHORUS CONTAINING A GROUP HAVING THE FORMULA $ROCH_2NHCO$—

Gunter Oertel, Cologne-Flittard, Hans Holtschmidt, Leverkusen-Steinbuechel, and Wolfgang Carl, Dormagen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 23, 1968, Ser. No. 723,584
Claims priority, application Germany, Apr. 25, 1967, F 52,234
Int. Cl. C07f 9/24; C07d 105/02; C08f 45/85
U.S. Cl. 260—923 4 Claims

Sulfur free esters and/or amides of acids of phosphorus which contain at least one group having the formula $ROCH_2NHCO$—, wherein R is alkyl, useful as additives for resins to impart flame-resistance.

3,639,533

TRIORTHOPHOSPHATE ESTERS OF TRIMETHYLOL PROPANE AND SALTS THEREOF

William G. De Pierri, Jr., Baytown, Tex., assignor to Esso Research and Engineering Company

No Drawing. Filed Apr. 4, 1968, Ser. No. 718,901
Int. Cl. C07f 9/02; C02b 5/06
U.S. Cl. 260—928 7 Claims

Triorthophosphate ester of trimethylol propane and the alkali metal and ammonium salts thereof.

3,639,534

HYDROXY TERMINATED PHOSPHORUS-CONTAINING HALF ESTERS OF BENZOPHENONE TETRACARBOXYLIC ACID

Harold E. Reymore, Jr., Wallingford, and Adnan A. R. Sayigh, North Haven, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of application Ser. No. 556,559, June 10, 1966. This application Nov. 5, 1968, Ser. No. 773,650
Int. Cl. C07f 9/08
U.S. Cl. 260—930 1 Claim

Polyols are described which are the half esters derived by reacting 3,3',4,4'-benzophenone tetracarboxylic acid dianhydride with 2 moles, per mole of dianhydride, of the adduct of 1 mole of 105 percent phosphoric acid and 5.8 moles of propylene oxide. The polyols so obtained have 1 free carboxy group for each anhydride moiety in the starting material. The polyols are intermediates in the preparation of high temperature resistant polyurethane foams.

3,639,535

TETRAPHOSPHONATES OF DIALLYL CHLORENDATE

Erich Kuehn, Wilmington, Del., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.

No Drawing. Filed May 3, 1968, Ser. No. 726,538
Int. Cl. C07f 9/40; C08g 22/44
U.S. Cl. 260—932 3 Claims

Phosphorus-containing compounds of diallyl chlorendate. The compounds have the properties of imparting flame-retardancy and intumescence to polymeric materials.

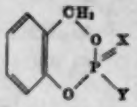
3,639,536

STABILIZED SALIGENIN CYCLIC PHOSPHORUS ESTERS

Noboru Muramoto, Ikeda-shi, and Johan Saiga and Yoshitsugu Suzuki, Takarazuka-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed Jan. 27, 1969, Ser. No. 794,395
Claims priority, application Japan, Apr. 6, 1968, 43/14,828; Nov. 7, 1968, 43/81,427
Int. Cl. C07d 105/04; A01n 9/36
U.S. Cl. 260—937 3 Claims

A stabilized composition consisting essentially of a saligenin cyclic phosphorus ester represented by the formula,



wherein X represents oxygen or sulfur and Y represents methoxy, a lower alkylthio having 1 to 4 carbon atoms, a lower alkenylthio having 1 to 4 carbon atoms, a phenylthio,

wherein R^1 is a lower alkyl having 2 to 4 carbon atoms, or

wherein R^2 and R^3 are a lower alkyl having 1 to 4 carbon atoms; and a stabilizer compound of a secondary arylamine including a compound having a pyrrole nucleus in the structural formula, the amount of the stabilizer compound being 0.1 to 20% by weight based on the weight of said esters, which is advantageously employed for the manufacture of insecticides.

3,639,537

ORGANO GLYOXYLONITRILE OXIMINO PHOSPHATES

Harold A. Kaufman, Piscataway, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Oct. 11, 1966, Ser. No. 585,742
Int. Cl. C07f 9/02; A01n 9/36
U.S. Cl. 260—940 5 Claims

Pesticidal compounds classed as phenyl- and substituted-phenylglyoxylonitrile oximino phosphates and phosphonates. Typical of the compounds provided are the O,O-dialkyl O-(4 - halophenylglyoxylonitrile oximino) phosphates and the S-alkyl O-(4 - halophenylglyoxylonitrile) alkylphosphonates. The invention further provides methods using said compounds as pesticides, as well as pesticidal compositions containing the new compounds and pesticidal carriers therefor.

3,639,538

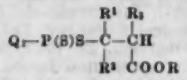
HINDERED PHENOLIC DERIVATIVES OF CERTAIN PHOSPHINODITHIOIC ACIDS OR AN O,O-DIESTER OF PHOSPHOROTHIOLOTHIONIC ACID

Eduard K. Kleiner, Dobbs Ferry, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

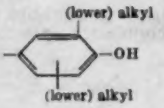
No Drawing. Filed Jan. 31, 1969, Ser. No. 795,696
Int. Cl. C07f 9/16, 9/32, 9/40
U.S. Cl. 260—941 10 Claims

Hindered phenolic derivatives of certain phosphinodithioic acids and O,O-diesters of phosphorothiolothionic acids are prepared by the addition of (a) an alpha, beta-unsaturated ester of a hindered hydroquinone and (b) a

phosphinodithioic acid or an O,O-diester of phosphorothiolothionic acid. Compounds are obtained which have the formula



wherein —Q is —R^4 or OR^4
—R is



where said (lower)alkyl has from 1 to 6 carbon atoms;
—R^1, R^2, —R^3 are each hydrogen, lower alkyl from 1 to 6 carbon atoms, phenyl, benzyl or

$$-C_mH_{2m}COOR$$

where *m* is 0 to 6;
—R^4 is alkyl from 1 to 24 carbon atoms, cycloalkyl from 1 to 6 carbon atoms, phenyl and benzyl and when Q is —OR^4 the two —R^4 groups can be $-(CH_2)_n-$, where *n* is 2 or 3, forming a cyclic O,O-diester of phosphorothiolothionic acid.

The compounds are useful as stabilizers for organic materials which are subject to oxidative and thermal deterioration.

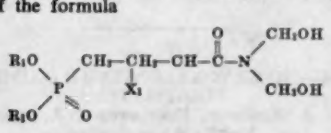
3,639,539

PHOSPHORUS-CONTAINING N,N-DIMETHYLOL-CARBOXYLIC ACID AMIDES

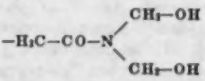
Hermann Nachbur, Dornach, and Arthur Maeder, Therwil, Switzerland, assignors to Ciba Limited, Basel, Switzerland

No Drawing. Filed Mar. 26, 1968, Ser. No. 715,980
Claims priority, application Switzerland, Apr. 11, 1967, 5,131/67
Int. Cl. C07f 9/40
U.S. Cl. 260—942 6 Claims

Phosphorus-containing N,N-dimethylolcarboxylic acid amides of the formula



wherein R_1 is an alkyl or halogen alkyl residue and X_1 is hydrogen or a group of the formula



These amides are suitable for rendering cellulose-containing fibrous materials flameproof. The flameproof finish is resistant to washing and dry-cleaning and improves the dry crease angle of the finished material.

3,639,540

SULFINYL PHENYL ESTERS OF THIONOPHOSPHORIC OR THIONOPHOSPHONIC ACIDS

Richard Sehring, Ingelheim am Rhein, Germany, assignor to C. H. Boehringer Sohn, Ingelheim am Rhein, Germany

No Drawing. Filed Dec. 3, 1968, Ser. No. 780,870
Claims priority, application Germany, Dec. 4, 1967, P 16 43 706.2; Feb. 27, 1968, P 16 43 764.2
Int. Cl. C07f 9/18; A01n 9/36
U.S. Cl. 260—949 2 Claims

Sulfinylphenyl esters of thionophosphoric acid or thionophosphonic acid and are useful as insecticides and acaricides.

3,639,541

ESTER-CONTAINING POLYOLS HAVING HALOGEN AND PHOSPHORUS ATOMS

Arthur L. Austin, Southgate, Louis C. Pizzini, Trenton, and William W. Levis, Jr., Wyandotte, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Filed May 13, 1968, Ser. No. 728,813
Int. Cl. C07f 9/08; C08g 22/44
U.S. Cl. 260—952 8 Claims

Ester-containing polyols are prepared by the reaction of (a) polyhydroxyl-containing compounds with (b) acids or oxides of phosphorus, (c) halogen-containing organic acid anhydrides, and (d) alkylene oxides. The polyols are particularly useful in the preparation of flame-retardant polyurethane foams.

3,639,542

ESTER-CONTAINING POLYOLS HAVING HALOGEN AND PHOSPHORUS ATOMS THEREIN

Louis C. Pizzini, Trenton, and William W. Levis, Jr., Wyandotte, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Filed May 13, 1968, Ser. No. 728,840
Int. Cl. C07f 9/08, 9/50; C08g 22/44
U.S. Cl. 260—952 6 Claims

Ester-containing polyols are prepared by the reaction of polyhydroxyl-containing phosphorus compounds with halogen-containing organic acid anhydrides and alkylene oxides. The polyols are particularly useful in the preparation of flame-retardant rigid polyurethane foams.

3,639,543

PROCESS FOR MAKING PHOSPHORUS-CONTAINING POLYETHER POLYOLS AND PRODUCT OF THE PROCESS

Robert A. Newton and Donnell A. Ballard, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Feb. 19, 1968, Ser. No. 706,623
Int. Cl. C07f 9/08; C08g 22/44
U.S. Cl. 260—953 9 Claims

Phosphorus-containing polyether polyols are made by a process comprising reacting an alkylene oxide with a mixture of a polyether polyol and a phosphoric acid. The phosphorus-containing polyether polyols produced by this process are useful in making fire resistant polyurethane foams.

3,639,544

PROCESS FOR MANUFACTURING HIGH MOLECULAR WEIGHT TRIARYL PHOSPHATES AND REACTION PRODUCTS THEREOF

Albert L. Smith, Middleport, Ohio, assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Nov. 22, 1967, Ser. No. 684,969
Int. Cl. C07f 9/12, 9/08
U.S. Cl. 260—966 4 Claims

A composition of matter and its phosphate derivatives consisting essentially of a high boiling point aromatic material containing from 9 to 18 carbon atoms and 3,4 xylenol and from 10 to 50% by weight of a lower boiling point aromatic material consisting essentially of 2,6 xylenol and a process of manufacturing the same.

3,639,545

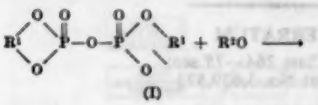
PROCESS FOR MAKING CYCLIC ALKYLENE PHOSPHATE, ALKYLENE ESTERS

Robert D. Wilcox, Palo Alto, Calif., assignor to The Dow Chemical Company, Midland, Mich.

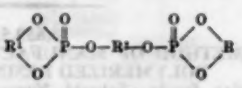
No Drawing. Filed Mar. 26, 1968, Ser. No. 715,993
Int. Cl. C07f 9/08
U.S. Cl. 260—971 6 Claims

Cyclic alkylene phosphate, alkylene esters are prepared by reacting a bis-alkylene pyrophosphate with an

equimolar proportion of a vicinal alkylene oxide, R^2O. This reaction can be represented as follows:



(I)



(II)

where R^1 and R^2 are vicinal alkylene groups. The compound of Formula II can be reacted with various active hydrogen compounds such, for example, as alcohols, glycols, water or the like, to open its rings and form alkylene phosphate esters useful as fire retardants in polyurethanes.

3,639,546

PROCESS FOR THE PRODUCTION OF PHOSPHATE ESTERS

William W. West, El Cerrito, Robert O. Bolt, San Rafael, and Chester D. Gordon, El Sobrante, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed July 29, 1968, Ser. No. 748,206

Int. Cl. C07f 9/12; C09k 3/00

U.S. Cl. 260—974 **7 Claims**

A process for the production of a mixed alkyl aryl phosphate ester, useful as a hydraulic fluid or other functional fluid, which comprises reacting $POCl_3$ and an alkanol at low temperature while purging with nitrogen, thereafter stripping product HCl from the reaction mixture with nitrogen at a temperature of 115°–125° F. under pressure of not more than 100 mm. Hg, the HCl free mixture is designated PCM, followed by reaction of the PCM with an alkali metal arylate to produce the ester.

3,639,547

METHOD FOR PREPARING O-METHYL-S-METHYL PHOSPHOROAMIDOTHIOATE

Philip S. Magee, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Continuation-in-part of application Ser. No. 468,986, July 1, 1965. This application Jan. 21, 1969, Ser. No. 792,785

Int. Cl. C07f 9/24; A01n 9/36

U.S. Cl. 260—989 **14 Claims**

Stable O-methyl-S-methylphosphoroamidothioate, useful as an insecticide, is prepared by ammoniating O,O-dimethylhalophosphorothioate with aqueous ammonia to form O,O-dimethylphosphoroamidothionate and reacting the O,O-dimethylphosphoroamidothionate with dimethyl sulfate or a methyl sulfonate at about 20 to 100° C.

3,639,548

METHOD OF PRODUCING METAL POWDERS

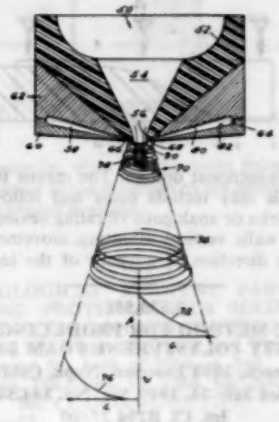
Terry S. Ullman, Royal Oak, and Chester J. Lecznar, Warren, Mich., assignors to Alloy Metals, Incorporated, Troy, Mich.

Original application Jan. 16, 1967, Ser. No. 609,562, now Patent No. 3,501,802. Divided and this application Oct. 31, 1969, Ser. No. 871,378

Int. Cl. B01j 2/04

U.S. Cl. 264—12 **4 Claims**

This disclosure relates to a method of producing metal powders in a swirling gas stream. Molten metal is introduced into a downwardly directed swirling gas stream having a greater pressure at the vortex or axis of the gas stream than at the perimeter or slip stream. The gas stream simultaneously atomizes the molten metal and suspends the atomized particles in the swirling slip stream, preventing the particles from falling directly to the bottom of the atomizing chamber. The particles may then be collected in the dry state, rather than in a fluid as shown by the prior art. The gas stream in the disclosed embodiment



enters the atomizing nozzle tangentially to its axis, and the velocity of the swirling gas is increased by the nozzle configuration to produce a self-sustaining tornado-effect, rolling and shearing the atomized metal particles and forming a relatively dense metal powder.

ERRATUM

For Class 264—41 see:
Patent No. 3,639,567

3,639,549

SHATTERED RESINS

Lewen B. O. Tugwell, Farnham, England, assignor to Shattaline Limited, Evanton, Ross and Cromarty, Scotland

No Drawing. Continuation-in-part of application Ser. No. 794,351, Jan. 27, 1969, which is a continuation-in-part of application Ser. No. 498,093, Oct. 19, 1965. This application May 14, 1970, Ser. No. 37,289

Int. Cl. B29c 25/00; C08g 51/26; C08j 1/14

U.S. Cl. 264—51 **3 Claims**

A method of producing a decorative body of an unsaturated polyester resin includes shaping a settable liquid mixture containing the resin and water, and allowing the mixture to set, the setting of resin generating sufficient heat to evaporate the water and thereby causing internal cracks in the set shape to give a decorative effect.

3,639,550

METHOD OF FORMING RECTANGULAR CROSS-SECTION FOAM POLYURETHANE BY VIBRATING THE SIDES OF THE FORMING CONVEYOR

Heinz Darnochwal, Memmingen, Germany, assignor to Metzeler AG, Munich, Germany

Filed Aug. 19, 1968, Ser. No. 753,503

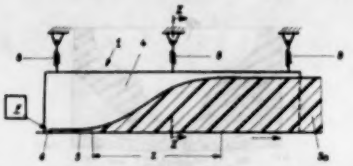
Claims priority, application Germany, Aug. 21, 1967, P 17 04 845.2

Int. Cl. B29d 27/04

U.S. Cl. 264—51 **5 Claims**

A continuous slab of foam material is produced by pouring free-rising polyurethane foam into a confining path defined by a liner of release paper which travels with a substantially horizontal bottom wall between two up-

standing side walls to convey the loaf through a foaming zone where the loaf rises to form a slab. The side walls are vibrated to prevent adherence of rising loaf to the liner in regions adjacent to the side walls and to thus insure the formation of a slab having a substantially rectangular cross-sectional outline. The means for vibrating the side walls may include cams and followers, crank drives, eccentrics or analogous vibrating devices which impart to side walls vertical vibratory movements at right angles to the direction of advance of the loaf.

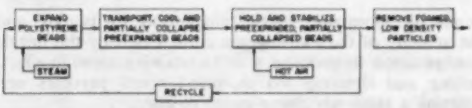


3,639,551

CYCLIC METHOD FOR PRODUCING LOW-DENSITY POLYSTYRENE FOAM BEADS

Irby H. Leach, 2094 Emerson, Napa, Calif. 94558

Filed July 24, 1969, Ser. No. 844,344
Int. Cl. B29d *27/00*
U.S. Cl. 264—55 5 Claims



Polystyrene beads are subjected to heated water vapor to partially expand the beads and they are thereafter transported to a holding chamber. During transportation, a partial collapse of the pre-expanded beads takes place. In the chamber the beads are subjected to heated air to stabilize their volume. From the holding chamber the pre-expanded beads are recycled a plurality of times until the beads have a density of about 0.5 pounds per cubic foot or less. The temperature of the water vapor is raised during each successive cycle.

3,639,552

METHOD OF PRODUCING FERRO-CEMENT PIPES

Michal Sandowicz, Ul. Dabrowicka 12, Warsaw 33, Poland

Filed Oct. 17, 1968, Ser. No. 769,476
Int. Cl. B28b *1/08*
U.S. Cl. 264—71 3 Claims

A method of molding a ferro-cement pipe with a multi-layer mesh reinforcement therein comprising moving an annular piston element downwardly within and in engagement with the interior surface of an external mold, an internal core surrounded by the multi-layer mesh reinforcement moving with the piston element, wet cement being introduced into the upper end of the mold cavity between the external mold and the internal web while vibrating the concrete, and then removing the internal core. A funnel is temporarily provided at the upper end of the external mold for receiving concrete.

ERRATUM

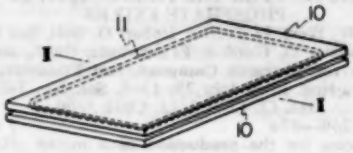
For Class 264—75 see:
Patent No. 3,639,573

3,639,553

METHOD OF MANUFACTURING SHEETS OF POLYMERIZED RESINOUS MATERIAL

Hideo Sueda, Takeshi Yamawaki, and Keiichi Kida, Tokyo-to, Masahiro Hayashi, Yokohama-shi, Kazuo Endo, Tokyo-to, and Mamoru Kaneko, Yokohama-shi, Japan, assignors to Mitsubishi Kasei Kogyo Kabushiki Kaisha (also trading as Mitsubishi Chemical Industries Limited), Tokyo-to, Japan

Filed July 10, 1969, Ser. No. 840,644
Claims priority, application Japan, July 17, 1968, 43/50,372, 43/50,373, 43/50,374; May 7, 1969, 44/35,050
Int. Cl. B29c *5/00*
U.S. Cl. 264—90 21 Claims



A method of polymerizing polymerizable resinous material in a cell including a pair of templates and a packing member sandwiched between them. The packing member is made of a compressible thermoplastic material, and by compressing the packing member, subatmospheric pressure is created in the cell, thus firmly holding the templates without using any mechanical clamping means.

3,639,554

METHOD OF MAKING SYNTHETIC-RESIN FOILS WITH PAPER-LIKE CHARACTERISTICS

Thomas Gough Hutt, 936 Pretorius St., Pretoria, Transvaal, Republic of South Africa

No Drawing. Filed July 28, 1969, Ser. No. 845,500
Claims priority, application Republic of South Africa, July 29, 1968, 68/4,893
Int. Cl. B29c *17/07*
U.S. Cl. 264—95 5 Claims

A method of making synthetic-resin foils, especially foils consisting in substantial part of a thermoplastic wherein 5 to 20% by weight of the mixture adapted to be formed into the foil is made up of a masterbatch or color concentrate consisting of 50 to 75% by weight of a pigment (organic or inorganic), preferably titanium dioxide, and 50 to 25% by weight of a wax, the latter making up the remainder of the color concentrate or masterbatch. The wax is a saturated hydrocarbon having more than 33 carbon atoms per molecule (with a carbon number of at least 33) and an average molecular weight of about 750.

3,639,555

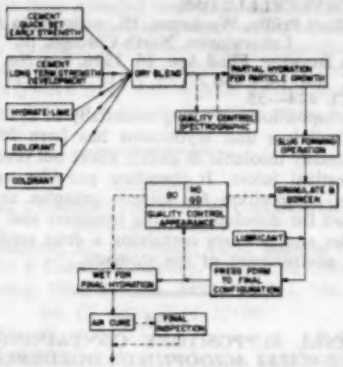
METHOD OF MAKING A CONCRETE PLUG

William J. Steffan, Fremont, Calif., assignor to Burke Concrete Accessories, Inc., Burlingame, Calif.

Filed Nov. 21, 1969, Ser. No. 878,786
Int. Cl. B28b *3/00*
U.S. Cl. 264—140 9 Claims

A method of making a concrete plug comprising the steps of providing an anhydrous cement mix, moisturizing this mix slightly to partially hydrate the mix and provide for particle growth, pressing the partially hydrated mix into a slug and then grinding the slug to create a mix hav-

ing a predetermined particle size larger than that of the starting mix, pressing the mix into plugs of final form,



wetting the plugs to start complete hydration, and completely hydrating the plug under ambient conditions.

3,639,556

METHOD FOR SPINNING COMPOSITE FILAMENTS

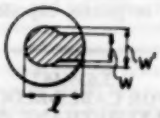
Masao Matsui, Takatsuki, Susumu Tokura, Osaka, and Masahiro Yamabe, Neyagawa, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

Original application Dec. 13, 1968, Ser. No. 783,585. Divided and this application Jan. 12, 1970, Ser. No. 7,434

Claims priority, application Japan, Dec. 21, 1967, 42/82,256, 42/82,257; Oct. 9, 1968, 43/73,752

Int. Cl. B29f *3/10*

U.S. Cl. 264—171 **3 Claims**



A composite filament suitable for manufacturing ladies' stocking having a crimpability comprising at least two fiber-forming components differing in shrinkability, which has such a particular cross-section that one component is interposed into the other component, for example, in a wedge-shape and occupies only 5 to 30% of the peripheral surface of the filament, is manufactured by flowing two independent same or different spinning materials in opposite directions to each other in two ducts each connecting to a common conduit and combining them and interposing a thin layer-like flow of another spinning material different from the above-described spinning materials between the two spinning material flows at the combined portion in the above-described particular cross-sectional shape and then extruding the thus combined spinning materials through the conduit from a common orifice.

3,639,557

PROCESS AND DEVICE FOR FILTERING MELTS OF FIBER-FORMING HIGH MOLECULAR WEIGHT POLYMERS

Otto Pfannenschmid, Bobingen, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed Apr. 1, 1970, Ser. No. 24,729

Claims priority, application Germany, Apr. 12, 1969, P 19 18 686.8

Int. Cl. B28b *3/20;* **D01d** *1/10*

U.S. Cl. 264—176 **8 Claims**

To remove impurities and inhomogeneities from spinning masses of fiber- and film-forming high molecular weight polymers the masses are filtered through a filter pack containing a finely divided material which is inert

towards the spinning mass and the mean fineness of grain of which increases in the direction to the spinneret according to an exponential function.

3,639,558

IMMUNOLOGICAL REAGENT PARTICLES HAVING PROTEINACEOUS MATERIALS COVALENTLY BONDED THERETO

Louis Csizmas, 1737 Inwood Court, and Virendra Patel, 1424 Locust St., both of Elkhart, Ind. 46514

No Drawing. Filed Feb. 19, 1968, Ser. No. 706,688

Int. Cl. G01n *31/00, 33/16*

U.S. Cl. 424—12 **7 Claims**

Reactive particles of controlled reactivity and size which are capable of direct chemical attachment to biological substances can be made by coating solid carrier particles with at least one coat of a proteinaceous material by the use of a first coupling agent and then attaching to said proteinaceous coat through covalent bonding a second coupling agent capable of attachment to biological substances through covalent bonding. Insolubilized biological reagents may be produced from such reactive particles merely by mixing these particles with biological substances which will be bound thereto through the second coupling agent. With the use of different coupling agents varying reactivity can be attained, and the desired final particle size will depend upon the number of coats of the proteinaceous material employed.

3,639,559

METHOD OF ISOLATING ANTIGENS AND/OR ANTIBODIES FROM PROTEIN MIXTURES

Barbara Tax, Goethestrasse 7, Graz, Austria

No Drawing. Filed July 9, 1968, Ser. No. 743,302

Claims priority, application Austria, Aug. 22, 1967, A 7,706/67

Int. Cl. A61r *27/00*

U.S. Cl. 424—12 **2 Claims**

Insoluble antigen and antibody derivatives are produced by adding formaldehyde to solutions or sera containing antigen or anti-body protein. These insoluble derivatives are stable specific immuno-adsorbents which are suitable for isolating homologous antibodies or antigens from mixtures with other proteins, and which can be repeatedly used. For eluting antibodies and antigens bound to immuno-adsorbents aqueous propionic acid has proved to be a generally applicable agent.

3,639,560

VETERINARY TREATMENT

David Martin Moran, Felpham, Bognor Regis, and Jack Vivian Croucher, Crawley, England, assignors to Beecham Group Limited, Brentford, Middlesex, England

Filed July 7, 1970, Ser. No. 52,925

Claims priority, application Great Britain, July 8, 1969, 34,256/69

Int. Cl. A61j *3/02;* **A61m** *3/00;* **A61k** *27/12*

U.S. Cl. 424—22 **9 Claims**

Method and composition of sustained release form for treating mammary disorders such as bovine mastitis. Bead

lets of 1 to 500 microns in diameter and containing a therapeutic agent are administered during the animal's dry period via the streak canal so that substantially all the therapeutic agent is released in the mammary gland before commencement of the lactation period.

3,639,561

VAGINAL SUPPOSITORIES AND IMPREGNATED TAMPONS

Maxwell Gordon, Philadelphia, Pa., and Carleton C. Stewart, Turnersville, N.J., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Filed Apr. 29, 1970, Ser. No. 33,051
Int. Cl. A61j *13/08;* A61k *9/02, 17/00*
U.S. Cl. 424—28 13 Claims

Contraceptive compositions comprising prostaglandin F2α or E2, oxytocin, adenosine triphosphate and ethylene diamine tetraacetic acid in the form of vaginal suppositories and/or impregnated tampons and methods of preventing conception or implantation by inserting in an animal organism said compositions after exposure to conception.

3,639,562

VAGINAL SUPPOSITORIES AND IMPREGNATED TAMPONS

Maxwell Gordon, Philadelphia, Pa., and Carleton C. Stewart, Turnersville, N.J., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Filed Apr. 29, 1970, Ser. No. 33,052
Int. Cl. A61j *3/08;* A61k *9/02, 17/00*
U.S. Cl. 424—28 11 Claims

Contraceptive compositions comprising oxytocin, adenosine triphosphate and ethylene diamine tetraacetic acid in the form of vaginal suppositories and/or impregnated tampons and methods of preventing conception or implantation by inserting in an animal organism said compositions after exposure to conception.

3,639,563

MOUTHWASH CONTAINING POLYMERIC POLYOXYETHYLENE NONIONIC SURFACE ACTIVE AGENT AND CHLOROFORM

Joseph Paul Januszewski, Somerville, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 734,544, June 5, 1968. This application July 23, 1970, Ser. No. 57,767
Int. Cl. A61k *7/16*
U.S. Cl. 424—49 16 Claims

The present invention provides an alcoholic aqueous mouthwash having superior taste characteristics. The mouthwash contains between about 0.5% and 3% of a polymeric polyoxyethylene containing nonionic surface active agent wherein the polyoxyethylene component of the polymer comprises at least about 40% of the polymer. The mouthwash also contains a small effective amount of chloroform to effect a stimulation of the taste characteristics thereof.

3,639,564

METHOD OF SUGAR COATING TABLETS

Ryuichi Kawata and Hiroitsu Kawada, Tokyo, Tadayoshi Ohmura, Niiza, and Sumio Uematsu, Urawa, Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

No Drawing. Filed Nov. 16, 1970, Ser. No. 90,105
Int. Cl. A01n *17/00;* A61k *9/00*
U.S. Cl. 424—35 6 Claims

Tablet cores containing medicaments, particularly, hygroscopic medicaments are coated by applying directly thereto sugar syrup containing a sucrose higher fatty acid ester without applying water proof coating or other subcoating treatment.

3,639,565

GASTRIC-RESISTANT TABLETS COATED WITH ERYTHROSINE AND HYDROXYPROPYLETHYLCELLULOSE

Elliott Prillig, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed Apr. 15, 1970, Ser. No. 28,915
Int. Cl. C08d *27/76, 27/02;* C09d *11/14*
U.S. Cl. 424—35 1 Claim

A composition consisting essentially of hydroxypropylmethylcellulose and erythrosine has been found to be substantially insoluble in gastric juices but readily soluble in intestinal juices. It therefore provides an excellent coating composition for tablets, granules and powders intended for dissolution in the intestines and for tablets, granules and powders containing a drug sensitive to the acidic environment of the stomach.

3,639,566

VAGINAL SUPPOSITORY CONTAINING *LACTOBACILLI ACIDOPHILUS* DOEDERLEINI

Ryoichi Naito, Ibaragi, Yoshigoro Oguro, Osaka, and Takuji Doi, Kyoto, Japan, assignors to The Green Cross Corporation, Osaka, Japan

No Drawing. Filed July 29, 1970, Ser. No. 59,354
Claims priority, application Japan, Jan. 12, 1970, 45/3,666
Int. Cl. A61j *3/08;* A61k *9/02;* C12k *1/08*
U.S. Cl. 424—37 8 Claims

Strains of *Lactobacillus acidophilus* Doederleini isolated from healthy young women's vagina had been continuously and successively cultured in culture media containing various kinds of antibiotics to make the strains antibiotics-resistant; the bacilli are cultivated in an adequate liquid culture media under a semi-anaerobic condition; culture media with grown bacilli are mixed with sterilized starch, which is separated from said media; starch with absorbed bacilli is added with dried sterilized starch and sealed in gelatin capsules after addition of estriol.

3,639,567

METHOD FOR CABLE-BLOCKING WITH POLYURETHANE FOAM

Harold C. Hervig, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Nov. 5, 1968, Ser. No. 773,628
Int. Cl. B29d *27/04;* H02g *15/20*
U.S. Cl. 264—45 5 Claims

An improvement in the method for in situ formation of gas-tight cable blocks in pressurized multi-conductor cables, the improvement comprising forming the cable block from a self-curing mixture of polyurethane precusor ingredients that exhibits a controlled foaming as it cures and thus a controlled expansion that forces the mixture between the conductors in the cable. The polyurethane composition reaches a viscosity of at least about 50,000 centipoises before a major amount of foaming and during foaming expands to between 5 and 25 percent of its original size.

3,639,568

GAS-RELEASABLE AND FOAMABLE COMPOSITIONS

William H. Schmitt, Elmhurst, Ill., assignor to Alberto-Culver Company, Melrose Park, Ill.

No Drawing. Filed Sept. 23, 1968, Ser. No. 761,876
Int. Cl. A61r *7/00, 7/06, 9/02*
U.S. Cl. 424—43 22 Claims

Gas releasable and foamable compositions, adapted to be packaged in conventional non-pressurized containers as, for example, metal or plastic collapsible or squeezable tubes, comprising substantially anhydrous compositions containing a compressible water-insoluble gas, particularly in the form of an aliphatic hydrocarbon or halogenated

hydrocarbon, dissolved in an organic solvent, such as a polyethylene glycol, which organic solvent is also water-soluble, and supplemental agents to complete the compositions for their intended uses, such as solid detergent tablets, suppositories, shaving creams, mouthwashes, enemas, drain cleaners, etc. When said compositions are wetted or admixed with water, said dissolved compressible gas is displaced from said organic solvent and is released in the form of a gas or, in certain cases, a gas to form a foam.

3,639,569

ORAL COMPOSITIONS FOR CALCULUS RETARDATION

Ralph F. Medcalf, Jr., Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Feb. 19, 1968, Ser. No. 706,685

Int. Cl. A61k *7/16, 27/00*

U.S. Cl. 424—48 **8 Claims**

Oral compositions, such as toothpaste, mouthwash, and the like, containing certain tris(phosphonoalkyl)amines and their salts which retard dental calculus formation without damaging tooth structure.

3,639,570

ORAL HYGIENE WITH AMINOPOLYUREYLENE RESIN

Paul Sheldon Grand, South Bound Brook, and Joseph Gerald Becker, Martinsville, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Nov. 16, 1970, Ser. No. 90,134

Int. Cl. A61k *7/16*

U.S. Cl. 424—54 **10 Claims**

A method of improving oral hygiene by inhibiting growth of streptococci and inhibiting formation of calculus and caries comprising intermittently contacting the oral cavity with a composition comprising an effective amount of an aminopolyureylene resin having a molecular weight in the range of about 300 to 100,000 in a compatible, nontoxic carrier and compositions for use in the method.

3,639,571

COMPOSITION AND METHOD FOR RETARDING PLAQUE AND DENTAL CALCULUS

Samuel Turesky, 84 Wallis Road, Chestnut Hill, Mass. 02167, and Irving Glickman, 24 Manor House Road, Newton, Mass. 02159

No Drawing. Continuation-in-part of application Ser. No. 530,781, Mar. 1, 1966, which is a continuation-in-part of application Ser. No. 679,994, Nov. 2, 1967, which in turn is a continuation-in-part of application Ser. No. 763,491, Sept. 23, 1968. This application Jan. 29, 1970, Ser. No. 6,933

Int. Cl. A61k *7/16*

U.S. Cl. 424—54 **13 Claims**

Formation of bacteria, e.g. of the type resulting in formation of bacteria, e.g. of the type resulting in the formation of dental plaque and dental calculus, is retarded by exposing surfaces to be protected to a composition containing compounds of the formula:

Where one of R_1, R_2 and R_3 is an amine group or substituted amine group and R_2 and R_3 are physiologically-tolerable organic radicals.

3,639,572

EYELINER COMPOSITION

Herbert W. Heinrich, Ridgewood, N.J., and Ingeborg M. Schmitt, Flushing, N.Y. (both % Chas. Pfizer & Co., 235 E. 42nd St., New York, N.Y. 10017)

No Drawing. Continuation-in-part of application Ser. No. 419,575, Dec. 18, 1964. This application Feb. 27, 1967, Ser. No. 619,018

Int. Cl. A61k *7/02*

U.S. Cl. 424—63 **1 Claim**

Water-resistant liquid makeup for the skin of the eyelids may be formulated on the basis of an aqueous dispersion of water-insoluble addition polymer in combination with polyhydric alcohol, pigment, water-insoluble inorganic silicate and optional ingredients as detailed in the disclosure.

3,639,573

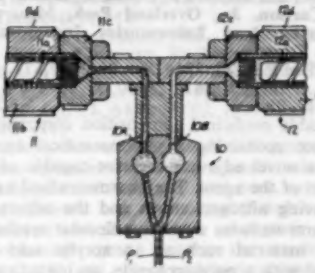
METHOD FOR MAKING A MULTICOLORED SPLIT POLYOLEFIN YARN

Morton I. Port, West End, N.J., assignor to Avisun Corporation, Philadelphia, Pa.

Filed Sept. 12, 1967, Ser. No. 667,140

Int. Cl. B29c *17/14;* **B29f** *3/12*

U.S. Cl. 264—75 **8 Claims**



A multicolored split yarn usable in decorative fabrics is produced by concurrently extruding at least two layers of polymeric material which are adapted to be differently colored, the layers being joined into a composite film-like web which is then slit into parallel tapes and stretch-oriented to produce mono-filament yarns of high strength, the yarns being fibrillated whereby each yarn is composed of a cluster of fine multicolored filaments whose edges are exposed as well as on the faces thereof.

3,639,574

STABLE HYDROGEN PEROXIDE GELS

Irving R. Schmolka, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Continuation-in-part of application Ser. No. 580,204, Sept. 19, 1966. This application Oct. 25, 1967, Ser. No. 677,884

Int. Cl. A61k *27/00, 7/12*

U.S. Cl. 424—78 **7 Claims**

Aqueous hydrogen peroxide gels possessing enhanced stability, useful in treating surface cuts and bleaching hair, are prepared employing certain polyoxyethylene polyoxypropylene block copolymers as gelling agents.

3,639,575

SILVER ION GEL COMPOSITIONS AND METHOD OF USING THE SAME

Irving R. Schmolka, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Continuation-in-part of application Ser. No. 580,204, Sept. 19, 1966. This application June 19, 1968, Ser. No. 738,110

Int. Cl. A61k *27/00*

U.S. Cl. 424—78 **7 Claims**

Compositions, particularly effective in the treatment of burns, are prepared from water-soluble silver salts and,

as a matrix therefor, aqueous gels of certain polyoxyethylene polyoxypropylene block copolymers.

3,639,576

RESTERILIZING CONTACT LENS SOLUTION

Hans H. Kaspar and Paul F. Kirk, Sunnyvale, Calif., assignor to Barnes-Hind Pharmaceuticals

No Drawing. Filed June 19, 1968, Ser. No. 738,131
Int. Cl. A61k *27/00*
U.S. Cl. 424—78 9 Claims

A rapidly resterilizing contact lens solution having a high degree of comfort for the user, and good retention of these properties on extended storage, is provided, utilizing a combination of partially hydrolyzed polyvinyl alcohol, an anti-microbial organic quaternary ammonium compound, and a small amount of EDTA.

3,639,577

INJECTABLE ADJUVANT, METHOD OF PREPARING SAME AND COMPOSITIONS INCLUDING SUCH ADJUVANT

John T. Urton, Prairie Village, and Max E. Glass, Kansas City, Kans., and Stephen F. Donahue, Kansas City, and Arthur Carlson, Jr., Overland Park, Mo., assignors to Haver-Lockhart Laboratories Incorporated, St. Shawnee, Kans.

Filed Feb. 23, 1968, Ser. No. 707,671
Int. Cl. A61k *23/00, 27/12*
U.S. Cl. 424—88 2 Claims

An injectable medicinal composition comprising a liquid substance containing a pharmaceutical agent combined with a novel adjuvant therefor capable of enhancing the effect of the agent. The pharmaceutical agent is of the type having nitrogen atoms and the adjuvant in its preferred form includes a macromolecular synthetic resin complexing material such as an acrylic acid polymer across-linked with a polysaccharide, an ingredient having amine groups, e.g. reconstituted collagen, and an emulsifier including polyoxyethylene sorbitan monooleate, sorbitan monolaurate, and cottonseed oil in water. The adjuvant is useful with various medicinal agents including antigens, hormones, allergens and serums of the type which will complex with the synthetic resin material.

3,639,578

VIRUS INSECTICIDE

Othmer F. Batzer, Libertyville, Ill., assignor to International Minerals & Chemicals Corporation

No Drawing. Filed Feb. 18, 1970, Ser. No. 12,446
Int. Cl. A61k *17/00;* C12k *1/06, 7/00*
U.S. Cl. 424—93 20 Claims

Disease insect larvae containing inclusion bodies with occluded virions are contacted with polar organic solvents to provide a dehydrated, substantially lipid-free powder that is readily dispersible.

3,639,579

PHARMACEUTICAL PREPARATION

Matthew C. Urbin, 4524 La Barca Drive, Tarzana, Calif. 91356

No Drawing. Continuation of abandoned application Ser. No. 864,526, Oct. 7, 1969. This application Dec. 10, 1970, Ser. No. 96,998
Int. Cl. A61k *19/00*
U.S. Cl. 424—94 5 Claims

A pharmaceutical preparation is provided for the treatment of hemorrhoids, and which contains oxidase enzymes, such asmonoamine oxidase, or diamine oxidase, or both. The object of the invention is to destroy the amines formed in the colon by bacteria. The amines are destroyed by the oxidizing action of the oxidases on the tissue and by the production of oxygen. The oxygen is produced, in some instances, by the action of the tissue itself, or a catalase enzyme may be added to the preparation which will decompose the hydrogen peroxide which is present into water and oxygen.

3,639,580

ANTIBIOTIC TUBERACTINOMYCIN AND PROCESS FOR PREPARING SAME

Akio Nagata, 421–1 Ohito, Ohito-cho, Tagata-gun; Takuji Ando, 744 Yoshida, Ohito-cho, Tagata-gun; Rokuro Izumi, 632–1 Mifuku, Ohito-cho, Tagata-gun; and Hideo Sakakibara, 6–3 Taisha-cho, Mishima-shi, all of Shizuoka-ken, Japan

Continuation of application Ser. No. 766,820, Oct. 11, 1968. This application Jan. 8, 1970, Ser. No. 3,584
Int. Cl. A61k *21/00*
U.S. Cl. 424—116 5 Claims

A new antibiotic of basic peptide Tuberactinomycin and the manufacturing process thereof which comprises the steps of: cultivating *Streptomyces griesoverticillatus* var. *tuberacticus* NRRL 3482 or equivalents thereof in a nutrient culture medium; cultivating the said culture medium aerobically until substantial antibiotic activity is imparted to said medium; isolating the said antibiotic from the culture medium; obtaining the said antibiotic in its essentially crystalline powder having an antituberculosis activity.

3,639,581

MELINACIDIN ANTIBIOTIC COMPLEX AND PROCESS FOR PREPARING THE SAME

Alexander D. Argoudelis, Portage, John H. Coats, Kalamazoo, and Fritz Reusser, Portage, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Oct. 25, 1967, Ser. No. 678,046
Int. Cl. A61k *21/00*
U.S. Cl. 424—117 8 Claims

Melinacidin antibiotic complex (U–26,362) producible by culturing *Acrostalagmus cinnabarinus* var. *melinacidinus* in a nutrient medium. Melinacidin antibiotic complex is antibacterially active and can be used to inhibit the growth of various microorganisms, for example, *Bacillus substilis, Staphylococcus aureus, Salmonella pullorum, Streptococcus hemolyticus, Streptococcus faecalis,* and *Proteus vulgaris.*

3,639,582

ANTIBIOTIC LASPARTOMYCIN

Hamao Umezawa, Masa Hamada, Hiroshi Naganawa, Tomio Takeuchi, Kenji Maeda, and Yoshiro Okami, Tokyo, Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Filed Apr. 4, 1968, Ser. No. 718,671
Claims priority, application Japan, Apr. 14, 1967, 42/23,397
Int. Cl. A61k *21/00*
U.S. Cl. 424—118 4 Claims

This invention relates to a process for the production of laspartomycin by fermentation method which comprises cultivating a strain of *Streptomyces viridochromogenes* var. *komabensis* in an aqueous carbohydrate solution containing a nitrogenous nutrient under submerged aerobic condition until substantial antibacterial activity is imparted to said solution and then recovering said laspartomycin from said solution.

3,639,583

BIOCIDAL ELASTOMERIC COMPOSITIONS

Nathan F. Cardarelli, Copley, and Harry F. Neff, Medina, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 515,154, Dec. 20, 1965. This application June 28, 1968, Ser. No. 741,223

Int. Cl. A01m *9/38*; A61k *27/12*

U.S. Cl. 424—125 15 Claims

A vulcanized elastomeric composition comprising an organic elastomer, an organic toxicant dissolved therein, and selected proportions of compounding ingredients including carbon black, wax, fillers, etc., and vulcanized to an intermediate degree are biocidal materials having a low, controlled and tailor-made rate of toxicant release for long-extended biocidal activity. Organic elastomers employed are natural rubber, neoprene, nitrile rubbers, butyl, SBR, polybutadiene, etc. Organic toxicants appreciably soluble in such elastomeric composition for such use include the organo-tin compounds, nitrosalicylanilide compounds, chlorinated hydrocarbons, organo-phosphorous compounds, etc. Such compositions are useful in sheet-like coverings thicker than about 0.05 inch for antifouling protection of submerged marine structures; as larvacides in the form of pellets, chunks, sheets, strips, tapes, etc., which on immersion in infested water or air liberate toxicant killing the adult, larvae and egg forms of mosquitos, midges, black flies, schistosome cercariae and their snail hosts, other gastropods, and other disease-causing and/or disease transmitting organisms and insect pests; as bacteriocidal, fungicidal and algicidal surfaces and coverings; and an animal- and insect-repellants. Certain ingredients of elastomer and vulcanizable rubber compositions, notably fatty acid materials, very materially enhance biocidal efficiency of compositions containing the organo-tin compounds.

3,639,584

METHOD FOR PROMOTING WEIGHT GAIN IN BRONZE TURKEYS

Eldon W. Klenholz, Fort Collins, Colo., assignor to Colorado State University Research Foundation, Fort Collins, Colo.

No Drawing. Filed July 1, 1968, Ser. No. 741,263

Int. Cl. A61k *27/00*

U.S. Cl. 424—127 2 Claims

This invention relates to a novel method for improving the weight gain in bronze turkeys, both male and female, which comprises dissolving in their drinking water a substantial concentration of sodium nitrate for their continued consumption from the hatching date or shortly thereafter up through not less than approximately two nor more than approximately six weeks of age.

3,639,585

METHOD OF PREVENTING CORTICOSTEROID-INDUCED ADVERSE EFFECTS ON BONE AND COMPOSITIONS USEFUL IN SAID METHOD

Robert H. Hesse, Winchester, Mass., assignor to Research Institute for Medicine and Chemistry, Cambridge, Mass.

No Drawing. Filed Mar. 29, 1968, Ser. No. 717,408

Int. Cl. A61k *17/00*, *17/16*

U.S. Cl. 424—128 10 Claims

A method of preventing the adverse effect on bone metabolism usually encountered with corticosteroid therapy comprises administering to an animal being treated with a corticosteroid, substantially simultaneously with said corticosteroid, a non-toxic, assimilable, phosphorus-containing substance, preferably neutral phosphate.

Described are pharmaceutical formulations useful in the prevention of corticosteroid-induced adverse effects on bone.

3,639,586

PROCESS FOR THE MANUFACTURE OF MIXED ANHYDRIDES CONTAINING ALKALI CHLORIDE, OF SORBIC ACID WITH PALMITIC OR STEARIC ACID AND THEIR USE AS PRESERVATIVES FOR BREAD AND PASTRY

Hans Fernholz, Fischbach, Taunus, and Hermann Neu, Neu-Isenberg, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Mar. 11, 1969, Ser. No. 806,313

Claims priority, application Germany, Mar. 16, 1968, F 55,088

Int. Cl. A01n *11/02*, *13/00*

U.S. Cl. 424—153 5 Claims

Mixed anhydrides of sorbic acid with palmitic acid or stearic acid are manufactured by reacting the acid chloride in a nonpolar organic solvent with sodium sorbate or potassium sorbate, the resulting anhydride containing 10 to 20% by weight of the alkali chloride. The mixture is used for preserving bread and pastry.

3,639,587

MEDICINAL COMPOSITIONS FOR ADMINISTRATION TO ANIMALS, AND PROCESS FOR ADMINISTERING SAME

Stanley R. Ames, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of application Ser. No. 625,467, Mar. 23, 1967. This application Nov. 7, 1969, Ser. No. 871,590

Int. Cl. A61k *15/02*, *15/10*

U.S. Cl. 424—173 28 Claims

An essentially non-aqueous medicinal preparation for injection into animals, comprising a medicinal and either a polyoxyethylene sorbitan fatty acid ester, or a polyoxyethylated ricinoleate (e.g. polyoxyethylated castor oil). The preparation can also include an organic ester as a viscosity reducing agent. Among the medicinals are vitamins A and E; and others such as hormones, steroids, detoxifiers, and anthelmintics.

3,639,588

PHARMACEUTICAL COMPOSITIONS CONTAINING FERRIC HYDROXIDE COMPLEXED WITH DEXTRAN OR DEXTRIN HEPTONIC ACIDS

Ranulph Michael Alsop, Alderley Edge, England, and Ian Bremner, Cults, Scotland, assignors to Fisons Pharmaceuticals, Limited, Loughborough, England

No Drawing. Original application Oct. 16, 1967, Ser. No. 675,343, now Patent No. 3,536,696, dated Oct. 27, 1970. Divided and this application Mar. 27, 1970, Ser. No. 23,476

Claims priority, application Great Britain, Oct. 22, 1966, 47,466/66; Dec. 21, 1966, 57,323/66; Aug. 16, 1967, 37,691/67

Int. Cl. A61k *27/00*

U.S. Cl. 424—180 16 Claims

An aqueous solution of a complex of ferric hydroxide with dextran heptonic acid or dextrin heptonic acid for parenteral administration to man and animals for treating iron-deficiency anemia.

3,639,589

PHARMACOLOGICALLY EFFECTIVE SUBSTANCE AND PROCESS FOR ISOLATING IT FROM *HAZUNTA GRACILIFLORA*

Alfred Groebel, Bad Soden, Taunus, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed Feb. 13, 1968, Ser. No. 705,117

Claims priority, application Germany, Feb. 16, 1967, F 51,541

Int. Cl. A61k *27/00*

U.S. Cl. 424—195 2 Claims

A pharmacologically active substance having spasmolytic and vasodilatatory effect isolated from *Hazunta gracili-*

flora and a process for isolating said substance from the plant material by alcohol extraction.

3,639,590

ANTIBACTERIAL COMPOSITION CONTAINING (—) (CIS-1,2-EPOXYPROPYL) PHOSPHORIC ACID

David Hendlin Springfield, and Edward O. Stapley, Spotswood, N.J., and Sagrario Mochales del Val and Justo Martinez Mata, Madrid, Spain, assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of applications Ser. No. 655,757, July 25, 1967, and Ser. No. 679,165, Oct. 30, 1967. This application May 9, 1968, Ser. No. 728,059

Int. Cl. A61k *21/00*

U.S. Cl. 424—203 9 Claims

(—)(Cis - 1,2 - epoxypropyl)-phosphoric acid, a water soluble acidic substance, and its salts are active against both gram-positive and gram-negative bacteria. The antibiotic is produced by growing newly-found and hitherto undescribed strains of Streptomyces on suitable fermentation mediums.

3,639,591

METHOD FOR DESTROYING SOIL NEMATODES

David L. Gerwitz and John P. Chupp, Kirkwood, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Sept. 18, 1969, Ser. No. 859,178

Int. Cl. A01n *9/36*

U.S. Cl. 424—216 6 Claims

Nematocidal usage of O-methyl S-(4-chlorophenylthiomethyl)methylphosphonodithioate.

3,639,592

METHODS FOR DESTROYING NEMATODES WITH O,O - DIETHYL S - [(CHLORO-SUBSTITUTED ALLYL) THIOMETHYL] PHOSPHOROTHIOATES

John P. Chupp, Kirkwood, and Robert L. Balske, Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Sept. 19, 1969, Ser. No. 859,563

Int. Cl. A01n *9/36*

U.S. Cl. 424—216 3 Claims

Nematocidal usage of O,O-diethyl S-[(chloro substituted allyl) thiomethyl] phosphorothioates.

3,639,593

SOIL INSECTICIDE OF PARATHION AND PARAFORMALDEHYDE

David Eugene Garrison, P.O. Box 173, Greeley, Colo. 80631

No Drawing. Filed May 1, 1969, Ser. No. 821,079

Int. Cl. A01n *9/36, 9/24*

U.S. Cl. 424—218 5 Claims

The invention is a soil pesticide which combines parathion and paraformaldehyde into a carrier, preferably a granular clay. In a preferred blend, approximately equal parts of parathion and paraformaldehyde are used and these active ingredients constitute approximately 10% of the blend.

3,639,594

PHARMACEUTICAL COMPOSITIONS CONTAINING 6-PHOSPHOGLUCONIC ACID AND SALTS THEREOF

Aurelio Filippo Notarianni and Giuseppe Ghielmetti, Milan, Italy, assignors to SPA—Societa Prodotti Antibiotici S.p.A., Milan, Italy

No Drawing. Filed June 5, 1967, Ser. No. 643,374

Claims priority, application Great Britain, June 6, 1966, 25,026/66

Int. Cl. A61k *27/00*

U.S. Cl. 424—224 2 Claims

There are described new salts of 6-phosphogluconic acid with metals and simple organic bases and new pharmaceutical compositions containing 6-phosphogluconic acid and/or the new salts thereof, these new pharmaceutical compositions possessing valuable therapeutic properties, especially for the regeneration of the liver.

3,639,595

ANIMAL FEED COMPOSITIONS AND METHODS FOR USING THE SAME

James Joseph Drain, Lawrenceville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Application Sept. 11, 1968, Ser. No. 759,214, now Patent No. 3,472,934, dated Oct. 14, 1969, which is a continuation-in-part of application Ser. No. 457,798, May 21, 1965. Divided and this application Oct. 13, 1969, Ser. No. 865,955

The portion of the term of the patent subsequent to Oct. 14, 1986, has been disclaimed

Int. Cl. A61k *21/00*

U.S. Cl. 424—227 4 Claims

Composition of matter and method for promoting growth, controlling disease, and relieving the deleterious effects of stress in ruminant animals, such as calves. The composition comprising a medicated feed supplement for the fortification and improvement of standard, nutritionally-balanced feeds and designed to provide ruminant animals with an optimum dosage of a combination of a tetracycline antibiotic and sulfamethazine. The feed supplement also containing crude protein and other edible animal feedstuffs.

3,639,596

METHOD OF TREATING LEG WEAKNESS IN FOWL WITH 25-HYDROXYCHOLECALCIFEROL

Hector F. De Luca and Milton L. Sunde, Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

No Drawing. Filed July 14, 1969, Ser. No. 841,592

Int. Cl. A61k *15/02*

U.S. Cl. 424—236 2 Claims

A method of treatment and prophylaxsis for leg weakness in fowl which comprises internally administering 25-hydroxycholecalciferol to the fowl.

3,639,597

PHARMACEUTICAL COMPOSITIONS CONTAINING CHOLANIC ACID CONJUGATES

John Hannah, Matawan, N.J., assignor to Merck & Co., Inc., Rahway, N.J.,

No Drawing. Filed Feb. 2, 1968, Ser. No. 702,509

Int. Cl. A61k *27/00*

U.S. Cl. 424—238 12 Claims

Pharmaceutical compositions comprising a 5β-glycocholanic acid or 5β-taurocholanic acid as the active ingredient. The compositions reduce plasma cholesterol and triglyceride levels in blood serum and, therefore, are useful in the treatment of conditions associated with atherosclerosis.

3,639,598

ANTI-INFLAMMATORY COMPOSITIONS AND METHOD

Paul D. Klimstra, Northbrook, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Mar. 19, 1969, Ser. No. 808,643
Int. Cl. A61k 27/00
U.S. Cl. 424—238 8 Claims

Compositions containing 17β-[N-(aminoalkyl)amino] androstan-3-ols, 5-dehydro and acyl derivatives thereof are useful for the treatment of inflammatory states.

3,639,599

UTEROTROPIC COMPOSITION

Werner Mehrhof, Klaus Irmscher, Giorgio Hecht-Lucari, Hans-Gunther Kraft, and Hartmut Kieser, Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

No Drawing. Continuation-in-part of application Ser. No. 766,316, Oct. 9, 1968. This application Apr. 20, 1970, Ser. No. 30,222
Claims priority, application Germany, Oct. 19, 1967, P 16 17 654.8
Int. Cl. A61k 17/06
U.S. Cl. 424—239 16 Claims

A combination of salts of:

(a) estrone sulfate, and
(b) estradiol-3-sulfate

yields a synergistic uterotropic effect much higher than that of estrone and is indicated for climacteric discomforts and the like.

3,639,600

PROCESS OF ESTABLISHING CYCLICITY IN A HUMAN FEMALE

John W. Hendrix, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of application Ser. No. 519,412, Jan. 10, 1966, which is a continuation-in-part of application Ser. No. 351,857, Mar. 13, 1964. This application Aug. 28, 1969, Ser. No. 853,983
Int. Cl. A61k 27/00
U.S. Cl. 424—242 1 Claim

Improved methods of systemically administering estrogens to human females wherein the estrogen is administered sequentially in gradually increasing amounts over a predetermined span of time. The estrogen administration is advantageously supplemented with concomitant systemic administration of a progestrogen. Beneficial results are achieved in contraceptive regimens and in menopausal and perimenopausal regimens.

3,639,601

BACTERIOSTAT AND FUNGISTAT COMPOSITIONS CONTAINING CYCLIC O,N-ACETALS

Rudolph Junghahnel, Witten-Bommern, and Gustav Renckhoff and Klaus Thewalt, Witten (Ruhr), Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

No Drawing. Filed July 16, 1968, Ser. No. 745,110
Claims priority, application Germany, July 20, 1967, D 53,634
Int. Cl. A01n 9/22; A61l 1/00
U.S. Cl. 424—244 7 Claims

The use of N-acylated cyclic O,N-acetals as bacteriostats and fungistats. Used alone or with a carrier, they are effective in inhibiting the growth of bacteria and fungi. The acetals are especially effective against gram-positive bacteria.

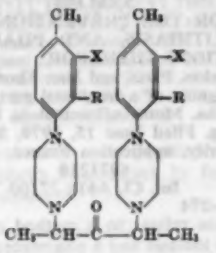
3,639,602

2,4-DI-(4-ARYLPIPERAZINO)-3-PENTANONES FOR TREATING SCHISTOSOMIASIS

Herschel D. Porter, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Nov. 24, 1969, Ser. No. 879,631
Int. Cl. A61k 27/00
U.S. Cl. 424—250 2 Claims

2,4-di-(4-arylpiperazino) - 3 - pentanones represented by the formula



wherein X is halo, and R is hydrogen or methyl. The compounds of this invention are useful for the treatment of schistosomiasis.

3,639,603

METHOD AND COMPOSITION EMPLOYING MIXED ETHER COMPOUNDS FOR ALLEVIATING CARDIAC ARRHYTHMIAS

Franklin N. Marshall, Indianapolis, Ind., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 6, 1969, Ser. No. 804,984
Int. Cl. A61k 27/00
U.S. Cl. 424—250 8 Claims

A method useful for alleviating cardiac arrhythmias such as tachycardias in animals by administering to arrhythmic mammals an antiarrhythmic amount of a mixed ether compound such as 2-[(4-amino-2,6-dibromophenoxy)methyl]-2-imidazoline or a pharmaceutically-acceptable salt thereof.

3,639,604

COMPOSITIONS CONTAINING AN ORGANIC THIOCYANATE AND 2-HYDROXY ALKYL ESTERS OF ORGANIC THIOSULFONIC ACIDS AND PROCESSES OF UTILIZING THE SAME

Stanley J. Buckman, John D. Buckman, John D. Pera, and Fred W. Raths, Memphis, Tenn., assignors to Buckman Laboratories, Inc., Memphis, Tenn.

No Drawing. Filed Mar. 8, 1968, Ser. No. 711,507
Int. Cl. A01n 9/12, 9/22
U.S. Cl. 424—270 6 Claims

A 2-hydroxy alkyl ester of an organic thiosulfonic acid is added to a microbicidal composition containing an organic thiocyanate to combine with the hydrogen cyanide formed by the decomposition of the thiocyanate.

3,639,605

WAX-COATED AND MICRONIZED ACETOXYMETHYL BENZYLPENICILLINATE

Arthur W. T. Rule, Westbourne, West Sussex, Roy E. Shimmin, Bellmont Park, Maidenhead, and Timothy Laundy, Wargrave, Reading, England, assignors to John Wyeth & Brother Limited, Taplow, England

Filed July 23, 1968, Ser. No. 746,849
Claims priority, application Great Britain, Aug. 8, 1967, 36,336/67
Int. Cl. A61k 27/00
U.S. Cl. 424—271 8 Claims

Acetoxymethyl benzylpenicillinate of improved properties in respect to ease of handling and blood levels attainable is prepared by micronizing the known (bulk) prod-

uct; preferably the micronized product is also admixed or coated with a compatible and pharmaceutically acceptable wax. The novel product may be administered as an aqueous suspension or as a solid in capsules or tablets. Desirably higher blood levels of penicillin result from its administration than are achieved by use of the prior art unmicronized acetoxymethyl benzylpenicillinate.

3,639,606

METHOD FOR THE PREVENTION OR CURE OF OXALIC LITHIASIS, AND PHARMACEUTICAL COMPOSITIONS THEREFOR

Jean-Marie Melon, Paris, and Jean Thomas, Saint Mande, France, assignors of a fractional part interest to Laboratoires Sauba, Montreuil-sous-Bois, France

No Drawing. Filed June 15, 1970, Ser. No. 46,553
Claims priority, application France, June 24, 1969, 6921210
Int. Cl. A61k *27/00*
U.S. Cl. 424—274 **2 Claims**

The invention relates to a method of preventing and treating oxalic lithiasis and a pharmaceutical composition therefor.

3,639,607

METHOD FOR TREATING THE TOBACCO SMOKING HABIT

Jack E. Phillips, 3470 Atlantic, NE., Warren, Ohio 44483

No Drawing. Continuation-in-part of application Ser. No. 825,422, May 16, 1969. This application Nov. 2, 1970, Ser. No. 86,275
Int. Cl. A61k *27/00*
U.S. Cl. 424—273 **9 Claims**

Treatment with an anticonvulsant drug, preferably one effective to prevent or retard grand mal and/or petit mal seizures in epileptic patents, allows a tobacco smoker to materially reduce, and in many instances totally eliminate, his smoking habit. During withdrawal, the normally accompanying anxiety is reduced or eliminated by the use of such a drug.

3,639,608

METHOD OF KILLING FUNGUS ON PLANTS

Bobby F. Adams, Pasadena, Tex., and William J. Pyne and James M. Gullo, Painesville, Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Original application June 1, 1967, Ser. No. 642,708. Divided and this application Jan. 19, 1970, Ser. No. 8,151
Int. Cl. A01n *9/22*
U.S. Cl. 424—274 **1 Claim**

Pyrrolidinyl carboxanilides and pyrrolidinyl thiocarboxanilides are disclosed along with their preparation, e.g., from unsubstituted or ring substituted phenylisocyanates and phenylisothiocyanates reacted with unsubstituted or alkyl substituted pyrrolidines. The compounds have biological activity and especially herbicidal activity.

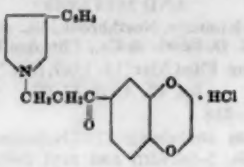
3,639,609

DRUG OF ADRENO-BLOCKING ACTION

Sergei Sergeevich Krylov, Ul. Zamshinu 54, kv. 8; Nadezhda Timofeevna Starykh, Ul. Bolshaya Porokhovskaya 54, korpus 2, kv. 80; Alexandr Grigorievich Chigarev, Ul. Blagodatnaya 53, kv. 21; and Andrei Vasilievich Eltsov, Pos. Pesochnoe 2, ul. Leningradskaya 70/1, kv. 51, all of Leningrad, U.S.S.R.

No Drawing. Filed July 31, 1969, Ser. No. 846,597
Int. Cl. A61k *27/00*
U.S. Cl. 424—274 **4 Claims**

A drug of adreno-blocking action is proposed, containing as active principle ω-(3¹-phenylpyrrolidyl-1¹)-6-propionylbenzo-1,4-dioxan hydrochloride of the formula



A process for the production of the active principle ω-(3¹-phenylpyrrolidyl-1¹)-6-propionylbenzo-1,4-dioxan hydrochloride comprises reacting 3-phenylpyrrolidene with 6-acetylbenzo-1,4-dioxan and paraform in the molar ratio of 1:1:2.6 in the presence of hydrogen chloride in alcoholic solution at a temperature of 60–120° C., removing the unreacted 6-acetylbenzo-1,4-dioxan, alkalizing the reaction mixture, extracting with ether the (3¹-phenylpyrrolidyl - 1¹) - 6-propionylbenzo-1,4-dioxan base formed, isolating the base and recrystallizing from ethyl ether, then dissolving in acetone and reacting with hydrogen chloride and isolating and purifying the final product by recrystallizing from ethanol acidified with hydrogen chloride.

3,639,610

CONTROLLING NEMATODES WITH N-CARBAMYL-2-IMINO-1,3-OXATHIOLANES

Bernard Pflugfelder, Artix, France, assignor to Societe Nationale des Petroles d'Aquitaine, Tour Aquitaine, France

No Drawing. Application Dec. 10, 1968, Ser. No. 782,775, which is a continuation-in-part of application Ser. No. 478,763, Aug. 10, 1965. Divided and this application Nov. 26, 1969, Ser. No. 877,576
Int. Cl. A01n *9/12*
U.S. Cl. 424—276 **2 Claims**

A method is provided for controlling nematodes with N-carbamyl-2-imino-1,3-oxathiolanes.

3,639,611

INSECTICIDAL COMPOSITIONS AND METHODS OF COMBATTING INSECTS USING CARBAMOYLOXIMES

Ian Trevor Kay, Brancknell, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Nov. 7, 1968, Ser. No. 774,198
Claims priority, application Great Britain, Nov. 21, 1967, 52,950/67
Int. Cl. A01n *9/00, 9/12*
U.S. Cl. 424—275 **12 Claims**

There are provided pesticidally active carbamoyloximes which are applicable to a broad range of pests and may be applied from compositions to the soil, locus of plants and locus of seeds which are to be protected from the pests. An example of the present oxime is isopropyl-5-methylthio-2-thienylketone O-(dimethylcarbamoyl) oxime.

3,639,612

CHALCOGEN CONTAINING HETEROCYCLICS AS AN IN VITRO ANTI-VIRAL AGENT

Donald C. De Long and Charles J. Paget, Jr., Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed May 16, 1969, Ser. No. 825,402
Int. Cl. A01n *9/00*
U.S. Cl. 424—276 **4 Claims**

Derivatives of tricyclic chalcogen containing heterocycles useful as anti-viral agents and in differentiating Polio III from other polio viruses.

3,639,613

COMPOSITION AND METHODS FOR CONTROLLING COCCIDIOSIS IN POULTRY EMPLOYING NITROTHIOPHENE DERIVATIVES

George L. Dunn, Wayne, and John R. E. Hoover, Glenside, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Filed Aug. 28, 1968, Ser. No. 755,781
Int. Cl. A61k 27/00
U.S. Cl. 424—275 10 Claims

Anti-coccidio and growth promoting compositions comprising optionally substituted nitrothiophene sulfonamides, nitrothiophene carboxamides, and nitrothiophene dicarboxamides.

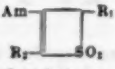
3,639,614

ARYLTHIETE-1,1-DIOXIDES AS ANTI-INFLAMMATORY AGENTS

Melvin Harris Rosen, Madison, and Herbert Morton Blatter, Springfield, N.J., assignors to Ciba-Geigy Corporation, Summit, N.J.

No Drawing. Filed Oct. 17, 1968, Ser. No. 768,525
Int. Cl. A61k 27/00
U.S. Cl. 424—275 1 Claim

2-aryl-3-amino-thiete-1,1-dioxides, e.g. those of the formula



R_1=halogenated phenyl or heterocyclic aryl
Am=tert. amino
R_2=H, alkyl, aralkyl or aryl

exhibit anti-inflammatory effects.

3,639,615

PROCESS FOR THE TREATMENT OF BENIGN PROSTATIC HYPERTROPHY

Edward Y. Domina, 61 Highland Ave., Arlington, Mass. 02174

No Drawing. Continuation of application Ser. No. 277,096, May 1, 1963, which is a continuation-in-part of application Ser. No. 684,857, Sept. 19, 1957. This application Apr. 10, 1969, Ser. No. 815,216
Int. Cl. A61k 27/00
U.S. Cl. 424—280 2 Claims

Disclosed is a preparation for the treatment of benign prostatic hypertrophy in adult male humans consisting of glutamic acid, 45% to 65% by weight; alanine, 15% to 30% by weight; glycine, 7% to 15% by weight; and ascorbic acid, 5% to 15% by weight.

3,639,616

PESTICIDAL FORMULATIONS

Irwin A. Lichtman, Oradell, Milton R. Johnson, Somerville, and Leo F. Sekula, Somerset, N.J., and Robert W. Dorn, Modesto, Calif., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 502,550, Oct. 22, 1965. This application Apr. 20, 1970, Ser. No. 30,250
Int. Cl. A01n 9/22, 17/08
U.S. Cl. 424—300 22 Claims

Carbamate pesticides generally insoluble in common agricultural solvents are increased in solubility by the addition of a phenolic compound.

3,639,617

PROCESS FOR PREPARATION OF A PESTICIDE EMPLOYING SULFONATED LIGNINS

Ellis Gray King, Bellingham, Wash., assignor to Georgia-Pacific Corporation, Portland, Oreg.

No Drawing. Filed Feb. 21, 1968, Ser. No. 707,286
Int. Cl. A01n 9/12, 9/20, 9/34
U.S. Cl. 424—300 9 Claims

A process for the preparation of a pesticide in dry form by dispersing the pesticide in a sulfonated lignin solution and ball milling the dispersion until the particle size of at least 90 percent of the pesticide is reduced to less than 5 microns and then spray drying the mixture. The product obtained has a relatively high bulk density and is readily dispersible in water.

3,639,618

FUNGICIDAL METHOD AND COMPOSITION CONTAINING SUBSTITUTED BENZYLTHIOCYANATES

John J. Barch, Crestwood, N.Y., assignor to Tenneco Chemicals, Inc.

No Drawing. Original application Sept. 28, 1966, Ser. No. 582,489, now Patent No. 3,476,790. Divided and this application Oct. 27, 1969, Ser. No. 871,114
Int. Cl. A01n 9/18
U.S. Cl. 424—302 6 Claims

This invention relates to a composition and method of protecting living plants from attack by fungi with substituted benzylthiocyanates.

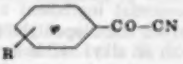
3,639,619

NEMATICIDAL AND FUNGICIDAL CYANIC DERIVATIVES

Daniel Demozay, Villeurbanne, Rodolphe Caffiero, Francheville-le-Bas, and Daniel Pillon, Lyon, France, assignors to Pechiney-Progil, Lyon, France

No Drawing. Filed Dec. 6, 1968, Ser. No. 781,969
Claims priority, application France, Dec. 8, 1967, 49,419
Int. Cl. A01n 9/20
U.S. Cl. 424—304 1 Claim

A cyanic derivative having the formula



and utilization thereof in parasiticidal compositions.

3,639,620

INSECTICIDAL COMPOSITION AND A METHOD OF USE COMPRISING CYANOALKYLTHIO OXIME CARBAMATES

Cyril Donninger, Sittingbourne, John H. Davies, Faversham, and Royston H. Davis, Rainham, England, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Application July 23, 1968, Ser. No. 746,750, now Patent No. 3,522,287, dated Dec. 29, 1969, which is a continuation-in-part of application Ser. No. 591,986, Nov. 4, 1966. Divided and this application Feb. 13, 1970, Ser. No. 14,894.
Claims priority, application Great Britain, Nov. 10, 1965, 47,675/65
Int. Cl. A01n 9/12
U.S. Cl. 424—304 2 Claims

Cyanoalkylthio oxime carbamates, such as 1-cyanomethylthioacetaldoxime N-methyl carbamate, having insecticidal activity, are described.

3,639,621

METHOD OF IMPROVING FEED UTILIZATION IN RUMINANTS

Roger C. Parish, King of Prussia, and John E. Trei, Malvern, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Filed July 29, 1969, Ser. No. 845,919
Int. Cl. A23k 1/00
U.S. Cl. 424—304 4 Claims

Haloalkanoic acids, amides, or nitriles are administered, preferably with animal feeds, to ruminants to improve feed utilization. They inhibit methanogenesis without adversely affecting total fermentation.

3,639,622

VASOCONSTRICTING AND BRONCHODILATING COMPOSITIONS AND METHODS UTILIZING GALLIC ACID AND ALKYL GALLATES

Paul Greengard, Hamden, Conn., and Barbara Petrack, Briarcliff Manor, N.Y., assignors to Geigy Chemical Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 509,611, Nov. 24, 1965. This application Nov. 22, 1968, Ser. No. 778,320

Int. Cl. A61k *27/00*

U.S. Cl. 424—308 16 Claims

Pharmaceutical compositions containing alkyl gallates or gallic acid and adapted for administration to the respiratory system can be employed for treating nasal decongestion and bronchospasms.

3,639,623

TOPICAL PHARMACEUTICAL COMPOSITION COMPRISING CERTAIN QUATERNARY AMMONIUM COMPOUNDS

Wolfgang A. Ritschel, Saeckingen, Germany, and Johanna Fischer, Ulrich Jahn, and Theodor Wagner-Jauregg, Zofingen, Switzerland, assignors to Siegfried Aktiengesellschaft, Zofingen, Switzerland

No Drawing. Filed Apr. 8, 1968, Ser. No. 719,668

Claims priority, application Sweden, Apr. 6, 1967, 4,899/67

Int. Cl. A61k *27/00*

U.S. Cl. 424—311 7 Claims

An antimicrobial pharmaceutical composition in particular for dermatological purposes and a method of treating with such pharmaceutical compositions infections of the skin and mucous membranes of animals and particularly human beings, the said pharmaceutical compositions containing as an essential ingredient a quaternary ammonium compound of dicyclopentylacetic acid diethylaminoethyl ester with an alkyl halide having from 5 to 12 and particularly 6 to 10 and most preferably 8 carbon atoms.

3,639,624

PHARMACEUTICAL COMPOSITIONS AND METHODS OF TREATMENT

Tsung-Ying Shen, Westfield, William V. Ruyle, Scotch Plains, and Bruce E. Witzel and Gordon L. Walford, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of application Ser. No. 836,620, June 25, 1969. This application Apr. 20, 1970, Ser. No. 30,289

Int. Cl. A61k *27/00*

U.S. Cl. 424—317 13 Claims

This invention relates to new pharmaceutical compositions having as an active ingredient substitute tricyclic carboxylic acids and their derivatives.

These pharmaceutical compositions are useful as anti-inflammatory compounds. Also included are methods of treating inflammation by administering these particular compositions to patients.

3,639,625

COMPOSITIONS CONTAINING LITHIUM SUCCINATE

Lewis Sherwin, 4580 Kensington Ave., Montreal, Quebec, Canada

No Drawing. Filed July 13, 1967, Ser. No. 653,029

Int. Cl. A61k *27/00*

U.S. Cl. 424—317 3 Claims

Therapeutic compositions containing lithium succinate for treating dermatitis and for producing an antipruritic effect.

3,639,626

SUPPRESSING THE ACTIVITY OF PLASMIN IN HUMANS AND ANIMALS WITH TRANS-4-(AMINOMETHYL)-CYCLOHEXANE - 1 - CARBOXYLIC ACID

Fujio Nagasawa, Shosuke Okamoto, Eiichi Takagi, Mikio Yokoi, and Mitsuo Mangyo, Tokyo, Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

No Drawing. Continuation of application Ser. No. 388,016, Aug. 6, 1964, which is a continuation-in-part of application Ser. No. 108,245, May 8, 1961, now Patent No. 3,268,405, dated Aug. 23, 1966. This application Aug. 25, 1967, Ser. No. 663,447

The portion of the term of the patent subsequent to Aug. 23, 1983, has been disclaimed

Int. Cl. A01n *9/20;* A61k *15/12*

U.S. Cl. 424—319 6 Claims

A method of suppressing the activity of plasmin in vivo comprising introducing an effective amount of trans-4-(aminomethyl)-cyclohexane-1-carboxylic acid into the living body of humans and animals; said trans-acid having the melting point of 380–390° C. (decomposed), the characteristic infra-red absorptions at 1637, 1535 and 1383 cm.$^{-1}$ and the following conformation:

and the melting point of the hydrochloric acid salt thereof [$C_8H_{15}NO_2$·HCl], the gold salt thereof

[$C_8H_{15}NO_2$·HCl·$AuCl_3$]

and the platinum salt thereof [$(C_8H_{15}NO_2$·HCl$)_2PtCl_4$] being 238–240° C. (decomposed), 204–206° C. (decomposed) and 254–255° C.

3,639,627

METHOD OF COMBATTING CHEWING INSECT LARVAE SPECIES OF THE ORDER LEPIDOPTERA USING N,N'-DICYCLOPROPYL DITHIOOXAMIDE

Gerhard H. Alt, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Nov. 14, 1968, Ser. No. 775,918

Int. Cl. A01n *9/20*

U.S. Cl. 424—320 4 Claims

N,N'-dicyclopropyl dithiooxamide which is useful in combatting chewing insect larvae species of the order Lepidoptera, particularly species of the family Noctuidae.

3,639,628

METHOD OF LOWERING ABNORMALLY HIGH LEVEL OF BLOOD UREA

William J. H. Butterfield, Richmond, Surrey, England, assignor to Beecham Group Limited, Brentford, Middlesex, England

No Drawing. Filed July 22, 1969, Ser. No. 843,845

Int. Cl. A61k *27/00*

U.S. Cl. 424—320 2 Claims

A method of lowering an abnormally high level of blood urea in a human patient suffering from diabetes mellitus with associated hyperuraemia wherein the compound 4-guanidino-butyramide and/or its physiologically compatible acid addition salts are administered in non-toxic but effective amounts.

3,639,629

METHOD OF INHIBITING THE GROWTH OF FUNGI BY APPLYING A COMPLEX OF ORGANIC AMINE WITH A COMPLETELY HALOGENATED ACETONE

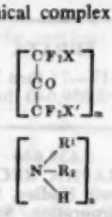
Karoly Szabo, Syracuse, N.Y., and Ashley H. Freiberg, Santa Clara, Calif., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Division of application Ser. No. 802,740, Feb. 17, 1969, which is a continuation of application Ser. No. 308,362, Sept. 13, 1963, which in turn is a continuation-in-part of application Ser. No. 221,456, Sept. 5, 1962. This application June 18, 1970, Ser. No. 47,570

Int. Cl. A01n 9/00

U.S. Cl. 424—325 2 Claims

The use of a chemical complex of the following formula:



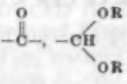
wherein R_1 and R_2 are hydrogen: an alkyl radical of from 1 to 18 carbon atoms; an alkyl radical of from 1 to 18 carbon atoms; an alkynyl radical of from 1 to 9 carbon atoms; a non-aromatic carbocyclic radical of from 5 to 6 carbon atoms; an aralkyl radical wherein the alkyl portion is lower alkyl and the aryl portion is a phenyl or naphthyl radical; phenyl radical; naphthyl radical; an amino radical; cyano or a heterocyclic radical; and when taken together R_1 and R_2 may form a heterocyclic ring system; it being provided that the aforesaid radicals may have attached thereto the functional moiety; halogen, —CN, —SCN, —COOR, $—SO_2NR_2$, —SOR, $—SO_3R$,

$—CONR_2$, —CONHR

—OH, —SH, $—NR_2$, —NHR, $—NH_2$, —OR, —SR,

—OC(O)R

CHO,



$—NO_2$ and —N=N, wherein R can be an organic radical of the type above defined for R_1 and R_2; X and X' are fluorine or chlorine, and *n* and *m* are integers of from 1 to 3 with the proviso that *n* and *m* are identical when equal to unity as a gungicide.

3,639,630

NONAQUEOUS LIQUID PESTICIDAL COMPOSITIONS

Bruno Sander and Heinrich Sperber, Ludwigshafen (Rhine), Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Jan. 27, 1969, Ser. No. 794,364

Claims priority, application Germany, Feb. 3, 1968, P 17 17 103.8

Int. Cl. A01n 9/28

U.S. Cl. 424—325 4 Claims

Nonaqueous liquid formulations for pest control which contain cyclic diethers or triethers and polyhydric alcohols as solvents for the pesticide.

3,639,631

METHOD OF CONTROLLING FUNGI AND BACTERIA

George Gerald Badcock, New Brighton, and Wilfred James Cecil Dyke, Upton-by-Chester, England, assignors to Evans Medical Limited, Liverpool, Lancashire, England

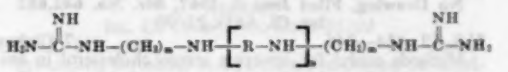
No Drawing. Continuation-in-part of application Ser. No. 481,122, Aug. 9, 1965. This application Jan. 15, 1970, Ser. No. 3,206

Claims priority, application Great Britain, Aug. 24, 1964, 34,538/64

Int. Cl. A01n 9/20

U.S. Cl. 424—326 9 Claims

Compositions for horticultural or agricultural use containing as an active ingredient, a compound of the general formula:



or acid addition salts thereof, wherein R is alkylene of 3 to 6 carbon atoms, *m* is 3 to 12, and *n* is 0 to 2, in an amount effective to control or prevent attack by plant pathogens, and a non-phytotoxic carrier, extender or diluent.

3,639,632

ANTIMICROBIAL COMPOSITIONS CONTAINING 1,1'-HEXAMETHYLENEBIS [5-(2 - ETHYLHEXYL) BIGUANIDE] DIHYDROCHLORIDE AND 4-CHLORO-2-HYDROXYPHENYL 2,4 - DICHLOROPHENYL ETHER

Thomas F. McNamara, North Caldwell, and Meyer Malakoff, Dover, N.J., assignors to Warner-Lambert Company

No Drawing. Filed June 22, 1970, Ser. No. 48,552

Int. Cl. A61k 27/00

U.S. Cl. 424—326 2 Claims

A synergistic antimicrobial composition containing 1, 1'-hexamethylenebis [5 - (2-ethylhexyl)biguanide] dihydrochloride and 4-chloro-2-hydroxyphenyl, 2,4-dichlorophenyl ether. Such compositions are useful against bacteria, such as *Staphylococcus aureus*.

3,639,633

SUBSTITUTED O-CARBAMYLHYROXAMATE PESTICIDES

James B. Buchanan, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 670,494, Aug. 31, 1967, which is a continuation-in-part of applications Ser. No. 361,277, Apr. 20, 1964, and Ser. No. 602,134, Dec. 16, 1966. This application Apr. 27, 1970, Ser. No. 32,410

Int. Cl. A01n 9/20

U.S. Cl. 424—327 23 Claims

Substituted O-carbamylhydroxamates such as methyl O-(methylcarbamyl)thiolacetohydroxamate are useful in controlling a variety of pests.

3,639,634

CARDIAC ANTIARRHYTHMIC METHOD AND COMPOSITION EMPLOYING ALKYLAMINO-ALKOXYHALOPHENOL COMPOUNDS

Franklin N. Marshall, Indianapolis, Ind., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 6, 1969, Ser. No. 804,983

Int. Cl. A61k 27/00

U.S. Cl. 424—330 10 Claims

A method useful for alleviating cardiac arrhythmias such as tachycardias in animals by administering to arrhythmic animals an antiarrhythmic amount of an alkylaminoalkoxyhalophenol compound such as 3,5-dibromo-4-(2-dimethylaminoethoxy)phenol or a pharmaceutically-acceptable salt thereof.

3,639,635

PROCESS FOR THE LIQUEFACTION OF MUCUS

James W. Bolger, Canoga Park, Calif., assignor to Riker Laboratories, Inc., Northridge, Calif.

No Drawing. Filed Feb. 11, 1969, Ser. No. 798,463
Int. Cl. A61k *25/00*
U.S. Cl. 424—335 2 Claims

A process for the liquefaction of mucus which comprises the contacting of said mucus with 1,4-dimercapto-2,3-O-isopropylidene-2,3-butanediol in an amount sufficient to induce in said mucus a state of liquefaction.

3,639,636

METHOD OF LOWERING SERUM CHOLESTEROL

James W. Barnhart, Indianapolis, Ind., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed June 1, 1967, Ser. No. 642,682
Int. Cl. A61k *27/00*
U.S. Cl. 424—346 7 Claims

Methods useful for lowering serum cholesterol in animals comprising administration to the animal of an effective amount of a tetraalkylbiphenol compound, preferably 2,2',6,6'-tetra-tert-butyl-p,p'-biphenol, and compositions to be employed in practicing the method.

3,639,637

WATER DISPERSIBLE DIETHYLSTILBESTROL COMPOSITIONS

James A. Campbell, Ashland, Ohio, assignor to Richardson-Merrell Inc., New York, N.Y.

No Drawing. Filed Apr. 23, 1968, Ser. No. 723,599
Int. Cl. A61k *27/00, 17/06*
U.S. Cl. 424—346 3 Claims

Water-dispersible diethylstilbestrol compositions comprising finely-divided diethylstilbestrol and 70 to 95 percent of a water-dispersible, gel-forming microcrystalline cellulose hydrocolloid and preferably also containing small amounts of a dispersing agent such as sodium carboxymethylcellulose and other similar hydrocolloids. The dry mixture is simply mixed with water for from 5 to 30 minutes to obtain a stable aqueous suspension of the diethylstilbestrol.

3,639,638

CORONARY VESSEL DILATION

John C. Krantz, Jr., Gibson Island, and Raymond M. Burgison, Catonsville, Md., assignors to The Chattanooga Medicine Company, Chattanooga, Tenn.

No Drawing. Continuation of application Ser. No. 791,159, Jan. 14, 1969, which is a continuation-in-part of application Ser. No. 428,556, Jan. 27, 1965, which in turn is a continuation-in-part of application Ser. No. 33,380, June 2, 1960. This application July 30, 1969, Ser. No. 848,408
Int. Cl. A16k *27/00*
U.S. Cl. 424—349 8 Claims

This invention relates to the dilation of coronary vessels and more particularly coronary arteries, and more particularly to the achieving of coronary vessel dilation by sublingual or subcutaneous administration of a haloglyceryl dinitrate, most particularly chloroglyceryl dinitrate.

3,639,639

CERMET HAVING LUBRICATING PROPERTIES AND PROCESS

Henry W. McCard, 208 Rodman Ave., Jenkintown, Pa. 19046

Filed Mar. 11, 1969, Ser. No. 806,154
Int. Cl. B44d *1/08*; D06f *47/00*
U.S. Cl. 117—71 R 13 Claims

An antifriction object having a porous cermet surface and a lubricating plastic such as Teflon impregnated in the pores. In applying the process to make the object, the lubricating plastic may be burnished to penetrate the pores. The cermet impregnated with the lubricating plastic is

heated just below the off-gassing temperature for the plastic.

ERRATA

For Classes 117—71 thru 260—397 see:
Patent Nos. 3,639,640 thru 3,639,670

3,639,640

ELECTROSTATOGRAPHIC RECORDING ELEMENT

Morgan E. Gager, South Hadley, Mass., assignor to The Plastic Coating Corporation, South Hadley, Mass.

No Drawing. Filed Feb. 27, 1969, Ser. No. 803,103
Int. Cl. G03g *5/00*
U.S. Cl. 117—224 10 Claims

An electrostatographic recording element containing a lithopone pigment in the dielectric, insulating layer of said element. The electrostatographic recording elements of this invention are useful in both direct and transfer electrostatic recording processes.

3,639,641

METHOD FOR RAPID MANUFACTURE OF NITRIDED THICK LAYER OF SUPER HIGH HARDNESS ON FERROUS METAL ARTICLES

Shinzoh Satoh, 548 Kichishoji, Musashino-shi, Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 573,499, Aug. 19, 1966. This application Mar. 20, 1969, Ser. No. 810,441
Claims priority, application Japan, Aug. 31, 1965, 40/52,738
Int. Cl. C23c *9/14*
U.S. Cl. 148—15.5 6 Claims

A method for the rapid manufacture of a thick nitrided layer of super high hardness on ferrous metal articles which comprises the steps of providing a ripened fused salt bath in a vessel, said salt bath being produced by adding a chloride to a cyanide compound or mixture of cyanide compounds and repeating the cycle of successively heating said bath to the boiling point thereof and cooling it to room temperature several times, and treating said ferrous metal article with said ripened fused bath. In a prefrred embodiment, the fused bath contains a catalyst comprising a compound of titanium or zirconium.

3,639,642

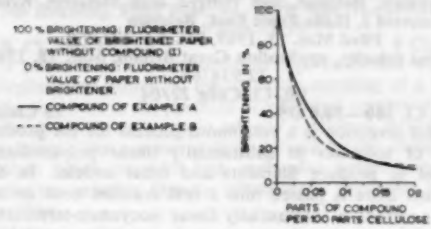
PROCESS FOR COUNTERACTING THE BRIGHTENING EFFECT DUE TO AN OPTICAL BRIGHTENER

Max Matter, Basel, Othmar Weidele, Aesch, Basel-Land, and Giuseppe Raspanti, Neuallschwil, Basel-Land, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

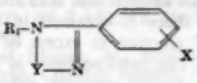
Filed Mar. 14, 1969, Ser. No. 807,320
Claims priority, application Switzerland, Mar. 30, 1968, 3,916/68; Aug. 30, 1968, 13,049/68
Int. Cl. D21d *3/00*
U.S. Cl. 162—158 10 Claims

The brightening effect produced by optical brighteners on organic substrates, particularly macromolecules of natural origin containing hydroxyl groups (such as natural or regenerated cellulose, especially in the form of

paper, or textile fibres), is nullified by the incorporation in said substrates of an acid addition salt or quaternization product of a cyclic amidine or of a polycondensation



product of such a cyclic amidine; the cyclic amidine itself has the Formula I



(I)

wherein:

Y is an alkylene chain with 2 to 4 carbon atoms between the two nitrogen atoms,

R_1 is hydrogen, alkyl, aryl or aralkyl with up to 7 carbon atoms and

X is hydrogen or a radical of the formula

and the polycondensation product contains a plurality of units corresponding to the amidine of Formula I, though in that case the radical R_1 is an alkylene chain with up to 8 carbon atoms and the radical X is —CO—NH— and/or the divalent hereterocycle shown in Formula I.

3,639,643

METHOD FOR ELIMINATION OF THE 32° C. PHASE TRANSITION IN GRANULES AND PRILLS CONTAINING FREE AMMONIUM NITRATE AND PRODUCTS PRODUCED THEREBY

Bengt O. P. Mollerstedt and Eduard Sulcs, Ljungaverk, Sweden, assignors to Fosfalbolaget, Sweden

No Drawing. Filed Feb. 25, 1969, Ser. No. 802,210
Claims priority, application Sweden, Feb. 26, 1968, 2,455/68
Int. Cl. C01c *1/18;* **C05c** *1/02;* **C06b** *1/04*
U.S. Cl. 252—1 **14 Claims**

This invention relates to a method for elimination of the 32° C. phase transition in granules containing free ammonium nitrates by incorporating into the liquid nitrate solution, prior to conversion of the nitrate into solid form, a colloidal hydrate or hydroxide of silicon or iron or aluminum.

3,639,644

COLLOIDAL ASBESTOS POLYETHYLENE GREASE

Arnold J. Morway, Clark, and Albert J. Bodner, Watchung, N.J., assignors to Esso Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 717,939, Apr. 1, 1968. This application Mar. 19, 1969, Ser. No. 808,670
Int. Cl. C10m *1/18, 1/10*
U.S. Cl. 252—13 **5 Claims**

A lubricating grease comprising a major amount of lubricating oil, about 3.0 to 20.0 wt. percent of a polyethylene of a number average molecular weight of 10,000 to 50,000 and about 1 to 25.0 wt. percent of colloidal asbestos exhibits a markedly long lubrication life and excellent structural stability. A particularly suitable polyethylene is one having a number average molecular weight of between 14,000 and 18,000. The colloidal asbestos is distinguished over art-known asbestos by naturally occurring extremely small tubular fibers.

3,639,645

SCALE INHIBITING COMPOSITION AND METHOD USING PHOSPHONIC ACID AND DI- OR HYDROXY-CARBOXYLIC ACID

Glyn Miller, Oldbury, Warley, and Graham Michael Smart, Haley Green, Halesowen, England, assignors to Albright & Wilson Limited, Oldbury, Warwickshire, England

No Drawing. Filed Feb. 28, 1969, Ser. No. 803,457
Claims priority, application Great Britain, Feb. 28, 1968, 9,655/68
Int. Cl. C02b *5/06;* **C07c** *55/02*
U.S. Cl. 252—180 **23 Claims**

Synergistic threshold composition comprising an alkylene polyamino methylene phosphonic acid such as EDTMP and a di- or hydroxy-carboxylic acid.

3,639,646

ANTI-TARNISH PROCESS USING DICYANDIAMIDE FORMALDEHYDE CONDENSATION PRODUCT

Peter Jochen Borchert, Elkhart, Ind., James Edward Slager, Edwardsburg, Mich., and Ronald George Sommer, Mishawaka, and Mitchell Frank Zienty, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed Mar. 28, 1969, Ser. No. 811,602
Int. Cl. C02b *5/06;* **C08g** *9/14*
U.S. Cl. 252—180 **6 Claims**

The clean surface of metals, such as copper and copper-containing alloy articles, can be protected from tarnishing by contacting such surface with a condensation product of dicyandiamide and formaldehyde. The preferred composition for use in this process contains the condensation product and a nonionic or anionic surfactant. This composition is generally mixed with water and the clean surface is dipped in or otherwise contacted with the aqueous solution.

3,639,647

HIGH SURFACE AREA ALLOYS OF NICKEL WITH MOLYBDENUM AND TUNGSTEN

William L. Kehl, Indiana Township, Allegheny County, Frank E. Lutinski, West Deer Township, Allegheny County, and Harold E. Swift, Gibsonia, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed July 3, 1968, Ser. No. 742,163
Int. Cl. B01j *11/74*
U.S. Cl. 252—439 **18 Claims**

Highly dispersed alloy materials of nickel and molybdenum and/or tungsten having a very high surface area are made by the controlled reduction of a mixture of compounds of the metals in a reducing atmosphere. These alloys and their sulfides are useful in catalysis such as hydrocracking, hydrogenation-dehydrogenation and hydroisomerization.

3,639,648

IMPROVEMENTS IN CATALYSTS

Thomas Nicklin, Middleton, Manchester, Frederick Farrington, Sale, and James Houghton, Bramhall, England, assignors to The Gas Council, London, England

No Drawing. Filed Mar. 17, 1969, Ser. No. 807,930
Claims priority, application Great Britain, Apr. 4, 1968, 16,350/68
Int. Cl. B01j *11/32, 11/06*
U.S. Cl. 252—465 **9 Claims**

A catalyst composition particularly suitable for the reforming or treatment of hydrocarbons comprises nickel

oxide, triuranium actoxide U_3O_8 and includes a compound of an alkali metal, which compound is in the form of an alkali metal uranate. In one method of manufacturing the catalyst shaped carriers are impregnated with a solution of salts of nickel uranium and alkali metal compound in a weak acid at a temperature below the decomposition temperature of the compound and the carriers are subsequently calcined at a temperature sufficient to form a uranate of said compound.

3,639,649

MANUFACTURE OF POLYAMIDE FOAMS USING AN OXYACID OF PHOSPHORUS

Harry McGrath, Raymond Frederick Moore, and Eric Smith, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Mar. 17, 1969, Ser. No. 807,973

Claims priority, application Great Britain, Mar. 29, 1968, 15,393/68

Int. Cl. C08g *53/10*

U.S. Cl. 260—2.5 N **19 Claims**

Production of nylon foam by heating a nylon above its working temperature with an oxyacid of phosphorus, e.g. orthophosphoric acid and a metal carbonate or bicarbonate, especially lithium carbonate.

3,639,650

MANUFACTURE OF MALEYL-FATTY ACID ADDUCT

Lowell O. Cummings, San Anselmo, Calif., assignor to Pacific Vegetable Oil Corporation, San Francisco, Calif.

No Drawing. Filed Mar. 28, 1969, Ser. No. 811,609

Int. Cl. C09f *7/00*

U.S. Cl. 260—18 R **10 Claims**

An adduct of an unsaturated unconjugated fatty acid or an ester thereof, such as a glyceride oil, and a maleyl compound is produced by reacting these components at a temperature between 300° F. and 350° F. in the presence of sulfur dioxide. This adduct is lower in viscosity, lighter in color and of higher acidity than prior-art adducts of such components, and therefore gives better results in coatings.

3,639,651

COVULCANIZABLE RUBBER COMPOSITION

Keiji Komuro, Tokyo, Masaaki Inagami, Kohoku-ku, Yokohama, and Yoshiomi Saito, Kanagawa-ken, Japan, assignors to The Japanese Geon Company, Ltd., Tokyo, Japan

No Drawing. Filed Mar. 4, 1969, Ser. No. 804,274

Claims priority, application Japan, Mar. 9, 1968, 43/14,956

Int. Cl. C08d *9/08*

U.S. Cl. 260—23.7 M **3 Claims**

A covulcanizable composition which comprises a mixture of 5–95% by weight of butadiene-acrylonitrile copolymer rubber and 95–5% by weight of epichlorohydrin polymer rubber, and a vulcanization agent consisting of, per 100 parts by weight of the first mixture, (I) 0.5–5.0 parts by weight of a member selected from the group consisting of aromatic polyamines, their salts, aliphatic polyamines, their salts, cycloaliphatic polyamines, 2-mercaptoimidazoline, 2 - mercaptopyrimidin, thiourea and substituted thiourea, (II) 1.0–10.0 parts by weight of an oxide, aromatic carboxylate, aliphatic carboxylate or phosphate of a metal selected from the group consisting of magnesium, calcium, zinc, cadmium, lead and tin, and (III) 0.3–3.0 parts by weight of an organic peroxide.

3,639,652

CONTINUOUS PROCESS FOR POLYMERIZING URETHANE PREPOLYMERS

Henri Albert Mommaerts, 17 Rue Paul Emile Janson, Brussels, Belgium, and Wilfred Jean Melaerts, Kruiskensveld 2, Halle Essen Beek, Belgium

Filed Mar. 13, 1969, Ser. No. 807,050

Claims priority, application Great Britain, Mar. 18, 1968, 12,934/68

Int. Cl. C08g *22/04*

U.S. Cl. 260—30.8 DS **15 Claims**

This invention is a continuous process for the production of solutions of substantially linear polyurethanes useful to produce filaments and other articles. In the process there is passed into a first reaction zone an organic solvent, a substantially linear isocyanate-terminated prepolymer and at least one chain extension agent having at least two hydrogen atoms to produce a solution of a semi-polymer. The prepolymer is present in the first reaction zone in an amount less than the stoichiometrical amount, so that there is obtained in the first reaction zone a degree of reaction in excess of about 80%, but less than 100%. The semi-polymer is then passed continuously into a second reaction zone where there is added an amount of prepolymer sufficient to complete the polymerization of the semi-polymer.

The process also involves the recycle to the first reaction zone of a portion of the semi-polymer solution produced therein.

3,639,653

PROTECTIVE COATING FOR METAL AND WOOD SURFACES

Trevor P. Clark, North Vancouver, British Columbia, and Paul C. Trussell, Vancouver, British Columbia, Canada, assignors to British Columbia Research Council, University of British Columbia, Vancouver, British Columbia, Canada

No Drawing. Filed Mar. 19, 1969, Ser. No. 808,649

Int. Cl. C08f *29/50, 45/04, 45/30*

U.S. Cl. 260—33.8 R **12 Claims**

There is described a coating composition that can be applied to wood and metal surfaces in the air or under water. This coating includes liquid chlorinated paraffin and/or low molecular weight polystyrene, polyester resin, and a suitable hydraulic cement or gypsum.

3,639,654

GASEOUS HALO-SULFONIC ACID ANHYDRIDE CATALYSTS FOR CURING FURFURYL ALCOHOLS AND FURAN RESINS

Janis Robins, St. Paul, Minn., assignor to Ashland Oil, Inc.

No Drawing. Filed Mar. 10, 1969, Ser. No. 805,817

Int. Cl. B22c *1/22;* **C08g** *13/00, 51/04*

U.S. Cl. 260—37 R **9 Claims**

Halogenated sulfonic acid anhydrides (e.g. trifluoromethyl sulfonic acid anhydride) are used to cure furfuryl alcohol or furan resins, optionally containing a silane. The method finds particular utility where the resins are used as foundry core binders, since the catalyst can be introduced in gaseous form, at room temperature.

3,639,655

PREPARATION OF HYDROXY-SUBSTITUTED POLYESTERS

Faber B. Jones, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Mar. 21, 1969, Ser. No. 809,395

Int. Cl. C08g *17/007, 33/10*

U.S. Cl. 260—47 C **9 Claims**

Thermoplastic hydroxy-substituted polyesters are prepared by reacting a diepoxide with a dicarboxylic acid in the presence of a polar organic solvent and a basic catalyst.

3,639,656

FORMATION OF POLYPHENYLENE ETHERS

James G. Bennett, Menands, and Glenn D. Cooper, Delmar, N.Y., assignors to General Electric Company

No Drawing. Filed Mar. 13, 1969, Ser. No. 807,126
Int. Cl. C08g 23/18
U.S. Cl. 260—47 ET 8 Claims

A process for the formation of high molecular weight polyphenylene ethers by the oxidative coupling of a phenolic precursor in the presence of a catalyst comprising an anhydrous non-basic cupric salt and a primary or secondary amine. The process is characterized by the choice of catalyst which provides high molecular weight polymer in a given reaction time or substantially decreased reaction time.

3,639,657

PRODUCTS OF ACID ANHYDRIDES AND POLYAMINES USED AS LATENT HARDENERS FOR EPOXY RESINS

Raymond Michael Moran, Jr., Bricktown, and Henry Thomas Belekicki, Convent Station, N.J., assignors to Ciba-Geigy Corporation

No Drawing. Continuation-in-part of abandoned application Ser. No. 547,442, May 4, 1966. This application Mar. 19, 1969, Ser. No. 808,698
Int. Cl. C08g 30/14
U.S. Cl. 260—47 EN 6 Claims

The reaction products of approximately equimolecular proportions of an acid anhydride, such as phthalic anhydride, and a polyamine, such as diethylenetriamine, are latent hardeners for epoxy resins having more than one 1,2-epoxy groups per molecule and, when combined with an epoxy resin, provide systems which are stable for long periods when stored at ambient or moderately elevated temperatures while providing on curing for relatively short periods at elevated temperatures, on the order of 100–150° C., hardened products of good properties.

3,639,658

PHENOLIC RESIN COMPOSITIONS MODIFIED WITH AN EPSILON CAPROLACTONE

Anthony C. Soldatos, Kendall Park, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Apr. 1, 1969, Ser. No. 812,343
Int. Cl. C08g 5/18
U.S. Cl. 260—59 9 Claims

This invention relates to phenolic resin compositions, containing an epsilon caprolactone, which are characterized by an excellent balance of properties, that is, by excellent flow characteristics and by excellent cure speed and are particularly suited for use in molding applications to form thermoset products having excellent chemical and physical properties and are also particularly suited for use as binders in the production of fiber reinforced laminates and composite structures.

3,639,659

CONTINUOUS EXTRACTION OF GRANULAR POLYAMIDES

Werner Nieswandt, Weinheim, Hermann Linge, Carlsberg, Hans Pirzer, Frankenthal, and Werner Hoerauf and Herbert Hetz, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Mar. 28, 1969, Ser. No. 811,650
Claims priority, application Germany, Mar. 30, 1968, P 17 70 097.9
Int. Cl. C08g 20/38
U.S. Cl. 260—78 L 4 Claims

Process for the continuous extraction of low molecular weight constituents from granular polyamides in an extraction zone in whose upper part the extractant is recycled.

3,639,660

PROCESS FOR THE POLYMERISATION OF CYCLOMONOOLEFINS

Karl Nutzel, Opladen, Karl Dinges, Odenthal, and Friedrich Haas, Cologne-Buchheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Feb. 25, 1969, Ser. No. 802,241
Claims priority, application Germany, Mar. 7, 1968, P 17 20 797.5
Int. Cl. C08d 3/06; C08f 3/02
U.S. Cl. 260—82.1 7 Claims

Cycloolefins are polymerised with a catalyst comprising an organic compound of a metal of Groups IV to VI of the Periodic Table, a Friedel-Crafts catalyst and optionally an oxygen compound.

3,639,661

POLYMERIZATION OF ISOBUTYLENE

Miroslav Marek and Jan Pecka, Prague, Czechoslovakia, Miroslav Chmelíř, Mainz, Germany, and Milena Roosova, Vienna, Austria, assignors to Ceskoslovenska Akademie Ved, Prague, Czechoslovakia

No Drawing. Filed Jan. 21, 1969, Ser. No. 803,519
Int. Cl. C08d 3/04
U.S. Cl. 260—94.8 9 Claims

The polymerization of isobutylene is readily controlled to produce a polymer of high molecular weight in the presence of a catalyst which is either a reaction product of titanium tetrafluoride with a chlorine bearing Friedel-Crafts catalyst soluble in isobutylene or a reaction product of titanium tetrachloride or boron trichloride with a fluorine bearing compound whose fluorine atoms are capable of partly replacing chlorine atoms in the titanium tetrachloride or boron trichloride.

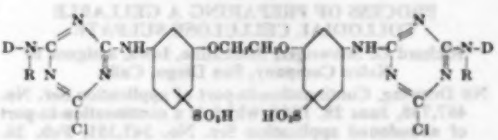
3,639,662

AZO DYES OF THE TRIAZINE SERIES

Geoffrey Griffiths and Cecil Vivian Stead, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Mar. 3, 1969, Ser. No. 804,020
Claims priority, application Great Britain, Mar. 7, 1968, 1,184/68
Int. Cl. C09b 62/08; D06p 1/02
U.S. Cl. 260—146 T 6 Claims

Reactive dyestuffs represented by the general formula:



wherein R represents a hydrogen atom or an alkyl group, and

represents the radical of a water-soluble coloured compound containing a —NHR group. These dyes are distinguished by the high degree of fixation achieved during dyeing processes.

3,639,663

THIOALKYLTHIOBENZOTHIAZOLES

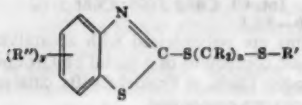
Kamal Naguib Ayad, Wrexham, Wales, assignor to Monsanto Chemicals Limited, London, England

No Drawing. Original application July 1, 1965, Ser. No. 468,950, now Patent No. 3,455,676, dated July 15, 1969. Divided and this application Aug. 28, 1968, Ser. No. 801,876

Int. Cl. C07d 91/44

U.S. Cl. 260—306 4 Claims

1. A benzothiazole derivative having the formula



where each R independently is selected from a group consisting of hydrogen and lower alkyl; *n* is an integer at least 1 but not more than 2; R′ is lower alkyl; R″ is selected from the group consisting of R′, R′O, chlorine, bromine, amino, and nitro; and y is an integer from zero to 2, inclusive.

3,639,664

MONOGLYCOL ETHER DERIVATIVES OF ALUMINUM HALIDES

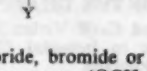
Horst W. Schmank, Ringgold, Ga., and Benjamin H. Gross, Chattanooga, Tenn., assignors to Chattem Chemicals, Division of Chattem Drug & Chemical Company, Chattanooga, Tenn.

No Drawing. Filed Feb. 25, 1969, Ser. No. 802,271

Int. Cl. C07f 5/06

U.S. Cl. 260—448 AD 6 Claims

Monoglycol ether derivatives of aluminum having the formula:



where X is a chloride, bromide or iodide ion, and Y is either a glycol ether group (OCH_2CH_2OR where R has from 1–4 carbon atoms) or an alkoxy radical containing from 1 to 18 carbon atoms are disclosed which are useful as intermediates for the synthesis of alkoxyaluminum hydrides and as antiperspirants.

3,639,665

PROCESS OF PREPARING A GELLABLE COLLODIAL CELLULOSE SULFATE

Richard G. Schweiger, Muscatine, Iowa, assignor to Kelco Company, San Diego, Calif.

No Drawing. Continuation-in-part of application Ser. No. 467,738, June 28, 1965, which is a continuation-in-part of abandoned application Ser. No. 347,351, Feb. 26, 1964. This application Apr. 10, 1969, Ser. No. 815,187

The portion of the term of the patent subsequent to Nov. 30, 1988, has been disclaimed

Int. Cl. C08b 5/14

U.S. Cl. 260—215 13 Claims

Process for preparing cellulose sulfate having a degree of substitution ranging from 1 to 3, preferably 2 to 3 and a viscosity in a 1% aqueous solution in excess of 20 cps., the process comprising presoaking the cellulose in a lower N-dialkyl amide for at least about 10 minutes at a temperature of about 0 to 25° C. and then reacting the presoaked cellulose with a lower N-dialkyl amide-sulfur trioxide complex for about 20 to 60 minutes at temperatures of about 0 to 35° C. Presoaking of the cellulose is carried out under agitation and the cellulose may contain up to about 10% by weight of water.

3,639,666

SPIROADAMANTANETHIAZEPINONES AND DERIVATIVES THEREOF

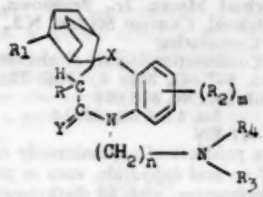
Venkatachala Lakshmi Narayanan, North Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed Mar. 14, 1969, Ser. No. 807,448

Int. Cl. C07d 93/40

U.S. Cl. 260—239.3 B 9 Claims

New antidepressants have been found which have the general formula



3,639,667

1,2-DIHYDRO-1-HYDROXY-4-PHENOXY-PYRIMIDINES

Joseph J. Ursprung, Portage, and William C. Anthony, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Original application Feb. 21, 1966, Ser. No. 528,790, now Patent No. 3,464,987, dated Sept. 2, 1969. Divided and this application Mar. 10, 1969, Ser. No. 805,811

Int. Cl. C07d 51/34

U.S. Cl. 260—256.4 C 6 Claims

1,2 - dihydro - 1 - hydroxy-4-phenoxypyrimidines, the corresponding acid addition salts, and the carboxylates are disclosed. These compounds are useful in the treatment of hypertension and shock.

3,639,668

N-(2,2,4,4-TETRAFLUORO-1,3-BENZODIOXANYL)-UREAS

Hans-Ulrich Alles, Leichlingen, Erich Klauke, Odenthal-Hahnenberg, Engelbert Kühle, Bergisch-Gladbach, Ludwig Eue, Cologne-Stammheim, and Helmuth Hack, Cologne-Buchheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 9, 1969, Ser. No. 814,815

Claims priority, application Germany, Apr. 19, 1968, P 17 68 244.9

Int. Cl. C07d 15/08

U.S. Cl. 260—340.3 7 Claims

N - (2,2,4,4 - tetrafluoro - 1,3 - benzodioxanyl) - ureas, i.e. N - (2,2,4,4 - tetrafluoro - 1,3 - benzodioxan - 6 - yl)-N′ - (optionally alkyl substituted) - N′ - alkyl - ureas which possess herbicidal properties, and which may be produced by conventional methods.

3,639,669

DEHYDROHALOGENATION OF HALOTETRAHYDROPYRANS

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Mar. 24, 1969, Ser. No. 809,935
Int. Cl. C07d 7/08, 7/10
U.S. Cl. 260—345.1 12 Claims

Dihydropyrans are formed by catalytic dehydrohalogenation of halotetrahydropyrans in the presence of an alkali metal halide.

3,639,670

4-PHENYLAMINO-3-NITRO BENZENE N-(3-ACETYLPHENYL) SULFONAMIDES

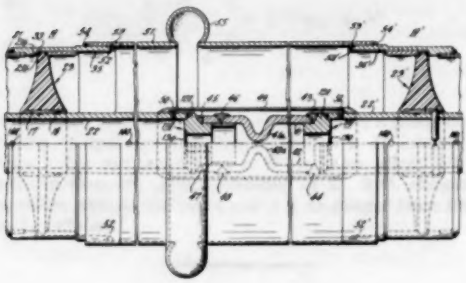
Andrew Fono, Montclair, and Robert E. Eagle, Metuchen, N.J., assignors to Otto B. May, Inc., Newark, N.J.

No Drawing. Filed Mar. 10, 1969, Ser. No. 805,862
Int. Cl. C07c 143/80
U.S. Cl. 260—397.7 R 6 Claims

This disclosure relates to certain new dye compounds which are 4 - arylamino - 3 - nitrobenzene-N-(3-acetylphenyl)-sulfonamides. This disclosure also relates to polyester-containing shaped articles, e.g., fibers, dyed with these compounds.

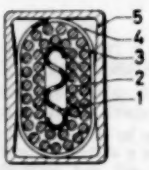
ELECTRICAL

3,639,671
FILTER ARRANGEMENT IN COMPRESSED-GAS-INSULATED ELECTRICAL CONDUCTORS
Robert M. Clark, Ligonier, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.
Filed Aug. 31, 1970, Ser. No. 68,152
Int. Cl. H02g *5/06*; H01b *9/06*
U.S. Cl. 174—14 R 4 Claims



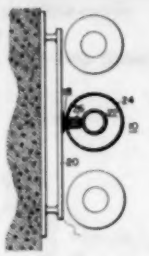
A microporous filter is located within the hollow inner conductor of a high-voltage gas-insulated transmission system including two concentric conductors. The filter prevents metallic dust particles, which may be present in the conductors, from migrating through the system to prevent any reduction in the dielectric breakdown voltage level of the system.

3,639,672
ELECTRICAL CONDUCTOR
Wilhelm Kafka, Tennenlohe, Germany, assignor to Institut fur Plasmaphysik G.m.b.H., Garching, Germany
Filed Feb. 20, 1970, Ser. No. 13,123
Claims priority, application Germany, Feb. 21, 1969, P 19 08 885.8
Int. Cl. H01b *7/34*, *5/00*
U.S. Cl. 174—15 C 24 Claims



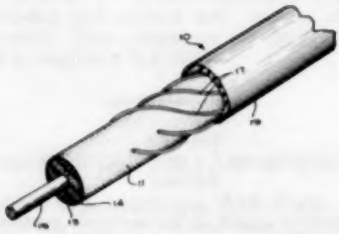
A cryogenic electric conductor formed from a plurality of superconducting wires arranged in a twisted configuration. The conductor is enclosed in a vacuumtight sheath and the gaps between conductor and the sheath and between the individual wires are filled with a low-temperature cooling medium, preferably helium. Each of the wires has one or more superconducting cores surrounded by a metal e.g. copper, in efficient heat-conducting contact therewith. The sheaths may be formed of a low-conducting metal or from a plastic.

3,639,673
VERTICALLY DISPOSED ISOLATED PHASE BUS
Yoshio Fujisaki; Akira Suzuoki, both of Hitachi, and Eiichi Ishibashi, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Aug. 5, 1970, Ser. No. 61,316
Claims priority, application Japan, Aug. 15, 1969, 44/64183
Int. Cl. H02g *5/06*
U.S. Cl. 174—16 B 8 Claims



Vertically disposed isolated phase bus whose length reaches to hundreds of yards including a conductor bar, a sheath concentrically enclosing the bar so as to define an annular space therebetween substantially uninterrupted over the whole length of the bar and supporting insulators supporting the bar on the sheath, wherein substantially uninterrupted successive small turbulent free-convection flows are formed along the longitudinal direction of the annular space, when the bar conducts electric current.

3,639,674
SHIELDED CABLE
Ronald L. Stier, Aurora, Ill., assignor to Belden Corporation, Chicago, Ill.
Filed June 25, 1970, Ser. No. 49,823
Int. Cl. H01b *11/06*
U.S. Cl. 174—36 13 Claims



A low-noise coaxial cable is formed with an elongated inner electrical conductor about which is an elongated, dielectric insulating layer of polymeric material which may be either a solid or foamed polymeric material. A thin electroless deposited shield of metal is intimately bonded to the outer peripheral surface of the insulating layer even if the same has surface irregularities therein. The insulating layer may be made with a constant uniform cross-sectional thickness, usually being annular in cross section, and bent and flexed without experiencing discontinuities in the shield which would destroy its effectiveness. The cable may be

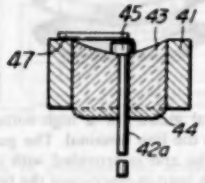
produced with ordinary commercially feasible techniques to obtain consistently good low-noise characteristics which are maintained even with substantial use and flexing over prolonged periods of time.

3,639,675

LAMINATED GLASS STEM AND METHOD OF MAKING SAME

Yoku Kaino, Kodaira-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 24, 1969, Ser. No. 860,513
Claims priority, application Japan, Jan. 27, 1969, 44/5254; Oct. 2, 1968, 43/71107
Int. Cl. H01j *5/00*
U.S. Cl. 174—50.61 **10 Claims**



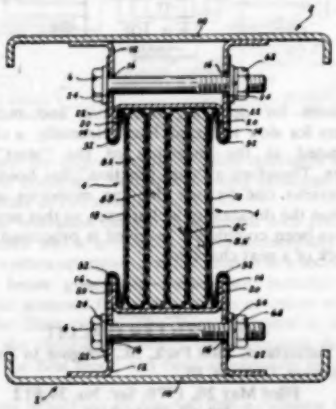
A stem having a metal cylinder, at least one metal lead extending through the cylinder, a glass body interposed between the cylinder and the lead for supporting the lead, electrically insulated from the cylinder, and a glass layer having a surface of greater resistivity than that of the glass body and covering at least a portion of the surface of the glass body so as to prevent a reduction of insulation resistance between the lead and the cylinder.

3,639,676

FEEDER BUS DUCT WITH IMPROVED HOUSING STRUCTURE

George A. Dempsey, Jr.; Martin F. Koenig, both of Milwaukee, Wis.; Manuel Issa, deceased, late of Milwaukee, Wis., and Patrick T. Sheedy, administrator, Fox Point, Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis., by said Dempsey and said Koenig

Filed Nov. 27, 1970, Ser. No. 93,146
Int. Cl. H02g *5/06*
U.S. Cl. 174—68 B **9 Claims**



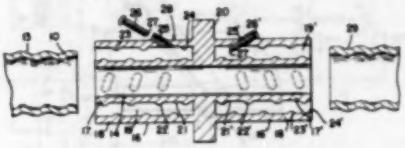
A plurality of wide flat insulated bus bars are compressed in flatwise adjacent relationship between inwardly bowed aluminum side members and formed sheet metal edge caps. The side members have reflex portions formed along opposite edges which extend angularly outward and are cammed inward by rail portions on the caps to compress the sides substantially flat on the bus bars and bias the bus bars firmly together. The resiliently bowed sides and reflex portions compensate in assembly for an accumulation of tolerances in the bus bars and their insulation. Bolts are used to secure the sides and caps together, and exaggerated clearance openings are provided for the bolts to permit the caps to be forced firmly against the bus bars with the bolts loosely in place before being finally secured.

3,639,677

ELECTRICAL CONDUIT COUPLING MEANS

Andrew Bain, 2440 Greenwich, San Francisco, Calif.

Filed Sept. 24, 1970, Ser. No. 75,107
Int. Cl. H02g *15/08*
U.S. Cl. 174—84 S **12 Claims**



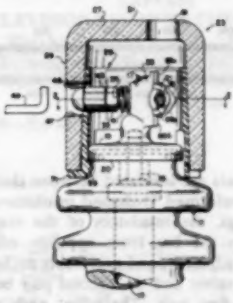
Coupling means for coupling a spirally wound flexible conduit to an electrical conduit or conduit box including a double-walled housing having projections thereon adapted to mate with the spirally wound surfaces of the flexible conduit and locking means for both further securing the flexible conduit within the walls of the housing and forming an electrical ground between the double-walled housing and the flexible conduit via the locking means.

3,639,678

BUSHING PROTECTIVE GUARD

Peter W. Muschong, St. Louis, Mo., assignor to Central Transformer, Inc., Pine Bluff, Ark.

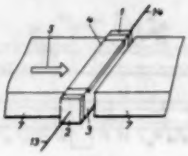
Filed July 17, 1970, Ser. No. 55,902
Int. Cl. H01b *17/00*
U.S. Cl. 174—145 **11 Claims**



A protective guard for attachment to a bushing of high-voltage electrical apparatus, for enclosing and guarding a connector assembly attached to the bushing. A sleeve of resilient electrically insulating material surrounds the connector assembly and has lips which engage the connector assembly and secure the sleeve thereto. A first knockout pro-

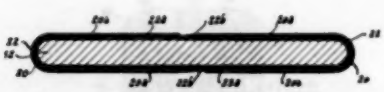
vides an aperture toward which a projecting portion of the connector assembly may extend to act as a gap electrode and a second knockout provides an aperture for accommodating a conductor to be laterally connected to the connector assembly. A cap of electrically insulating material has a top and a sidewall which fit respectively over and around the sleeve in engagement therewith. An aperture in the top accommodates a conductor to be vertically connected to the connector assembly and at least one aperture in the sidewall of the cap provides access to one of the knockouts.

3,639,679
SEMICONDUCTOR MICROPHONE
Sune Lambert Overby, Stockholm, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed Jan. 13, 1970, Ser. No. 2,551
Claims priority, application Sweden, Jan. 21, 1969, 752/69
Int. Cl. H04r *23/00*
U.S. Cl. 179—110 B **5 Claims**



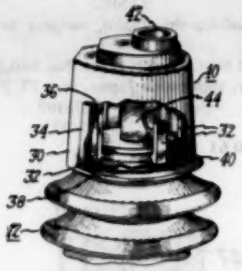
A microphone includes a permanent magnet having an air-gap in which a semiconductor diode sensitive to a varying external magnetic field is suspended. The diode is connected to a sound-responsive element so that when the sound-responsive element is vibrated by acoustic waves, the diode will oscillate in the airgap of the permanent magnet so that the current through the diode will vary according to the vibrations.

3,639,680
INSULATED BUS BAR ASSEMBLY
George A. Dempsey, Jr.; Martin F. Koenig, and Clyde F. Robbins, all of Milwaukee, Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.
Filed Dec. 7, 1970, Ser. No. 95,617
Int. Cl. H01b *7/02, 7/08;* **H02g** *5/06*
U.S. Cl. 174—117 FF **6 Claims**



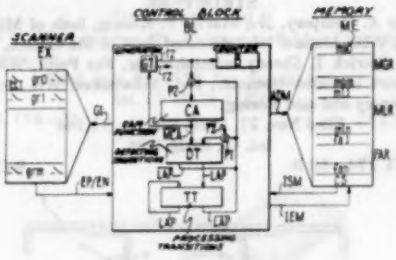
Individual bus bars are insulated between their offset ends by two pairs of preformed U-shaped insulator strips having unequal length legs, the insulators of the respective pairs being slipped over the bar from opposite edges with the longer leg of each adjacent, and preferably tucked under, the shorter leg of the other and the second pair being disposed oppositely of the first pair. The offset ends are insulated either by a spiral wrap of insulating tape or a dip coating of insulation, each applied to overlap the ends of the preformed insulators. Three or four individually insulated bus bars are assembled with offset ends flared apart and have a preformed elongated rectangular insulator, slit along one side, disposed around the assembly between the innermost bends of the offset ends. The complete assembly between the offset portions is then tightly encased within a metallic housing.

3,639,681
BUSHING TERMINAL GUARD
Louis F. Ettlinger, Conover, N.C., assignor to General Electric Company
Filed Sept. 2, 1970, Ser. No. 68,888
Int. Cl. H01b *17/00*
U.S. Cl. 174—138 F **2 Claims**



A bushing terminal guard for a high-voltage bushing to prevent contact with the line terminal. The guard is made of a rigid plastic material and is provided with internal fingers having notches which snap in place over the bushing terminal cap. An opening is provided to receive the high-voltage line which is to be connected to the high-voltage terminal of the bushing.

3,639,682
TELEGRAPH LINE SCANNING SYSTEM
Henri Benmussa, Meudon; Ngoc-Sanh Bui, L'Hay-les-Roses, and Gerard Troubac, Paris, all of France, assignors to International Standard Electric Corporation, New York, N.Y.
Filed Dec. 12, 1969, Ser. No. 884,432
Int. Cl. H04l *17/16*
U.S. Cl. 178—3 **8 Claims**

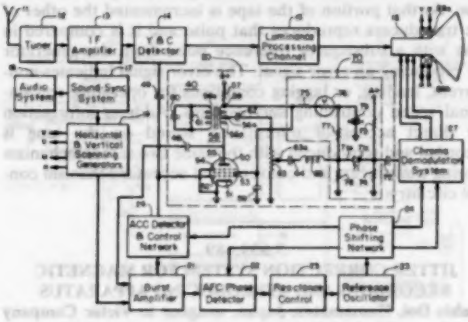


A system for detecting transitions and reconstituting characters for slow telegraph lines. Normally, a character is reconstituted at the receiving of the "start" of next character. Therefore a "cam function" has been provided, which reviews one by one the line memories at intervals longer than the duration of a character, so that any character which has been completely received is processed regardless of the lack of a next character.

3,639,683
COLOR KILLER CIRCUIT
John B. Sutherland, Villa Park, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed May 20, 1970, Ser. No. 39,812
Int. Cl. H04n *9/48*
U.S. Cl. 178—5.4 CK **4 Claims**

Improved color killer circuitry for disabling the chrominance processing channel during monochrome or very weak color signal reception. The circuit includes a high-

speed semiconductor switching device interposed in the signal path of the chrominance channel and poled to conduct color information therethrough when the signal level is at a predetermined magnitude. At signal levels below threshold, the semiconductor switch is effectively reverse-biased. The disclosed circuitry further includes actuating means responsive to a source of potential wherein variations in signal level



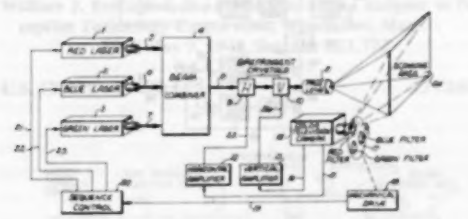
are indicative of instantaneous amplitude of the reference burst signal and which further represent received signal strength. When the chrominance information extracted from the received composite signal reaches a predetermined level, i.e., threshold, the semiconductor switching device becomes forward-biased thereby opening the signal path to pass appropriate chrominance information to subsequent stages in the chrominance channel.

3,639,684

FIELD SEQUENTIAL LASER SCAN FOR NIGHT COLOR TELEVISION

Arnold M. Levine, Chatsworth, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 20, 1970, Ser. No. 65,614
Int. Cl. H04n *9/04, 9/06, 9/34*
U.S. Cl. 178—5.4 R **10 Claims**



A system for closed circuit or other television in low ambient light condition, said system being arranged for operation in either of two modes.

A color television camera is equipped with red, blue and green filters which are applied field sequentially in a first mode of system operation and are unused in a second mode.

Laser beam generating means are included and are adapted to generate three laser beams of colors corresponding to the filter colors. The laser generator is adapted to produce the three beam colors simultaneously during each frame in the first mode and field sequentially in the second mode.

The laser beams are all directed into a common beam path which is passed through horizontal and vertical laser beam deflection devices to scan the laser beams synchronously with the camera scan.

The deflection devices illustrated are preferably birefringent crystal devices which receive suitably amplified camera sweep signals and correspondingly vary their coefficients of refraction to produce laser beam scanning congruent with the camera scan.

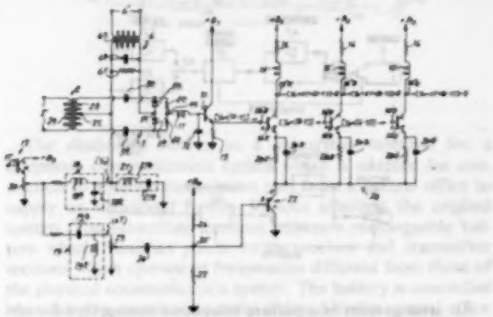
Economical illumination in a single-camera system is thereby effected, and the system is adapted to future developments in multicolor lasers.

3,639,685

SIGNAL SUPPLYING CIRCUIT FOR A COLOR PICTURE TUBE

Minoru Morio, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 1, 1969, Ser. No. 862,889
Claims priority, application Japan, Oct. 7, 1968, 43/72980
Int. Cl. H04n *9/50*
U.S. Cl. 178—5.4 MA **9 Claims**



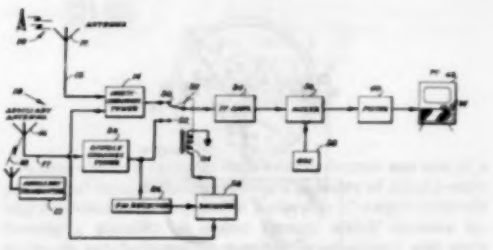
In a signal supplying circuit for a color picture tube, the luminance signal component of a color signal is divided into a high-frequency component and a low-frequency component, the low-frequency component is supplied to a demodulator for the chrominance signal component of the color signal so that the output of the demodulator which is supplied to the output amplifier contains the demodulated chrominance signal component mixed with the low-frequency luminance signal component, and the high-frequency luminance signal component is separately applied to an input of the amplifier for mixing in the output of the latter with the chrominance signal component and the low-frequency luminance signal component so as to constitute therewith a complete color video signal for application to a color picture tube.

3,639,686

TELEVISION RECEIVER CUT-IN DEVICE

Harold R. Walker, Metuchen, N.J., and Ira Kamen, New York, N.Y., assignors to Homarket Inc., Bridgeport, Conn.

Filed Apr. 25, 1969, Ser. No. 819,232
Int. Cl. H04b *1/06*
U.S. Cl. 178—5.8 R **18 Claims**



A market-testing television system which may be utilized with present day television systems and is capable of select-

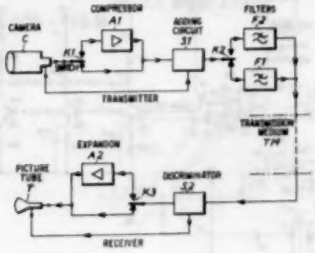
ing specific sections of a general audience listening to a conventional channel and providing an auxiliary program for the selected sections.

3,639,687

ARRANGEMENT FOR VIDEO SIGNAL TRANSMISSION AT A PICTURE TELEPHONE CONNECTION

Curt Danell, Johanneshov, and Nils Olof Johannesson, Bandhagen, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Sept. 4, 1969, Ser. No. 855,166
Claims priority, application Sweden, Oct. 9, 1968, 13597/68
Int. Cl. H04b 7/12
U.S. Cl. 178—6 1 Claim



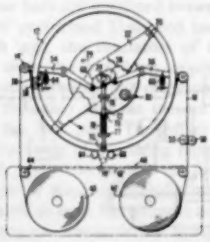
An arrangement in a picture telephone connection for obtaining optimal quality of the picture both when the connection is used for transmitting a picture of an object which only requires a sharp contrast for example a page of text and when the connection is used for transmitting a picture of an object which requires a wider range of different light intensities for example a face. In the first case the video signal is compressed in a compressing amplifier in the transmitter and supplied to the transmission medium leading to the receiver via a low-pass filter having a steep transition from passband to suppressed band and an expanding corresponding to the compression is carried out in the receiver. In the second case the video signal is supplied to the transmission medium uncompressed via a low-pass filter having a flat transition from passband to suppressed band.

3,639,688

SERVOMECHANISM FOR INCREMENTING STRIP RECORD TRANSPORTING SYSTEMS

Robert Gordon Nelson, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 24, 1970, Ser. No. 66,202
Int. Cl. G11b 15/52; H04n 5/78; G11b 3/40
U.S. Cl. 178—6.6 P 15 Claims



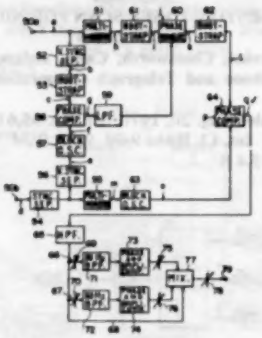
An audio-video signal storage device of the type in which a magnetic tape is advanced in increments of one or more intertrack spacing intervals is enhanced for continuous incrementing by a servosystem comprising a pair of electromagnetic transducers spaced apart along one portion of the tape at an interval of one-half (or an odd multiple) of the increment and a generator establishing a reference pulse at a time of predetermined, preferably maximum velocity of the tape as it is being incremented. That reference pulse is applied to one of the transducers for recording on one portion of the tape. As that portion of the tape is incremented the other of the transducers reproduces that pulse and it is compared in time with a subsequent reference pulse from the generator for producing an error signal. The error signal indicates concurrent, leading, or lagging conditions for operating conventional speed controlling servosystems. Address information for direct access of information stored on the tape is recorded and reproduced with the same two servomechanism sensing transducers and conventional access mechanism control circuitry.

3,639,689

JITTER CORRECTION SYSTEM FOR MAGNETIC RECORDING AND REPRODUCING APPARATUS

Toshio Doi, Hamamatsu, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Nov. 20, 1969, Ser. No. 878,278
Claims priority, application Japan, Nov. 21, 1968, 43/84825; Feb. 14, 1969, 44/10507
Int. Cl. H04n 5/04, 5/14, 5/78
U.S. Cl. 178—6.6 TC 9 Claims

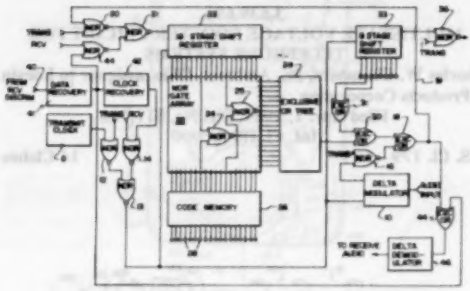


A jitter correction system effectively corrects jitter in a television picture recorded and reproduced by a magnetic recording and reproducing apparatus. The system comprises a first phase comparator means for comparing the phase of a synchronizing signal of a reproduced video signal with the phase of an outside synchronizing signal for the vertical synchronizing interval. A phase modulation of either the outside synchronizing signal or the reproduced video signal responsive to the output of the first phase comparator means represents a detected phase difference. A second phase comparator means compares the phase of the rest of the outside synchronizing signal and the reproduced video signal with the phase of the output signal of the phase modulator means, for the horizontal synchronizing interval. The output of the second phase comparator means represents a detected jitter component corresponding to the distortion of the reproduced television picture. This output is utilized for effecting a correction of the jitter of the reproduced television picture.

3,639,690
DIGITAL PRIVACY SYSTEM

William V. Braun, and Albert J. Leitich, both of Chicago, Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Sept. 10, 1969, Ser. No. 856,714
Int. Cl. H04l 9/04
U.S. Cl. 178—22 15 Claims

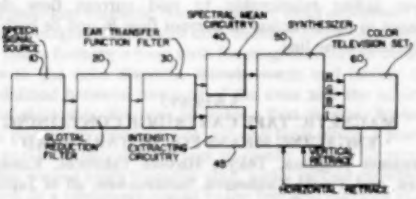


A digital voice-privacy system uses a delta modulator to convert voice information to digital data which then is encoded by combining the output of the delta modulator with a digital signal derived from selected stages or a shift register and a programmable code memory with the resultant data train being fed back as the input signal train for the shift register. The output of the last stage of the shift register is the encoded data. The data is decoded by a similar system, with the received signals being supplied to the input of a shift register and programmable code memory circuit comparable to the one used in the encoder to form a decoding signal which is combined with the encoded digital data to provide an output to a delta demodulator, the output of which then is the desired decoded voice information.

3,639,691
CHARACTERIZING AUDIO SIGNALS

William J. Beninghof, Jr., Roslindale, Mass., assignor to Perception Technology Corporation, Winchester, Mass.

Filed May 9, 1969, Ser. No. 823,372
Int. Cl. G10l 1/12
U.S. Cl. 179—1 VS 13 Claims

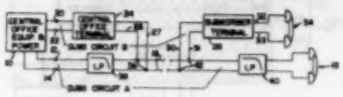


The loudness, spectral mean and spectral spread of speech signals are represented in the visual domain similar to brightness, hue and saturation of a color, respectively. The above parameters of a speech signal are extracted, and, by various operations, adapted for use in, and/or with other systems. As in color, the values of these parameters are defined relative to reference frames such that the parameters so extracted are to a large degree insensitive to extraneous ambient noises, speaker differences and overall (wideband) filterings.

3,639,692
SUBSCRIBER TERMINAL UNIT FOR TELEPHONE CARRIER SYSTEM

Lester Q. Krasin, Dallas, and Clifford E. Greene, Fort Worth, both of Tex., assignors to Superior Continental Corporation

Original application Aug. 2, 1967, Ser. No. 660,165, now Patent No. 3,510,584, Continuation-in-part of application Ser. No. 549,399, May 11, 1966, now abandoned. Divided and this application Dec. 22, 1969, Ser. No. 887,271
Int. Cl. H04j 1/00
U.S. Cl. 179—2.5 R 8 Claims

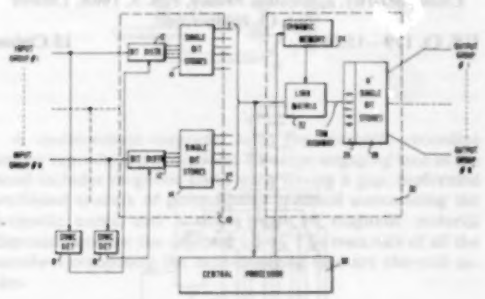


The disclosure relates to a subscriber terminal for a telephone communication system which is adapted for connection to a cable transmission pair from a central office to supply an additional facility without affecting the original system. The subscriber terminal utilizes a rechargeable battery which furnishes power to its receiver and transmitter sections which operate at frequencies different from those of the physical communication system. The battery is controlled by a charging circuit so as to be charged by the central office power supply during nonoperation of the physical system.

3,639,693
TIME DIVISION MULTIPLEX DATA SWITCH

William F. Bartlett, Rochester, and William A. Oswald, Brighton, both of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Nov. 22, 1968, Ser. No. 784,991
Int. Cl. H04j 3/00
U.S. Cl. 179—15 AT 12 Claims



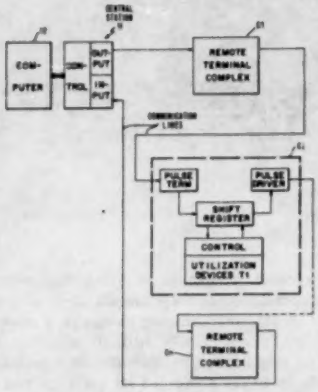
A time division multiplex data switch wherein any one of a plurality of input channels forming a plurality of input groups may be switched to any one of a plurality of output channels forming a plurality of output groups, which includes individually synchronized bit distributors associated with each input group, for distributing the bits to a plurality of single-bit stores, each associated with a channel, and a single-time division highway controlled by a dynamic memory.

3,639,694

TIME DIVISION MULTIPLEX COMMUNICATIONS SYSTEM

Herman Deutsch; Edgar H. Steward, and Walter D. Van Gieson, Jr., all of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 15, 1969, Ser. No. 791,334
Int. Cl. H04j 3/00
U.S. Cl. 179—15 AL 9 Claims



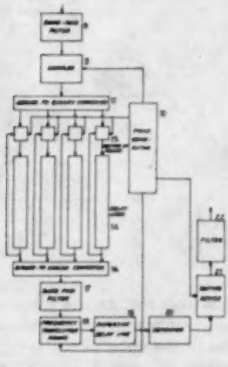
A closed loop two-wire serial communications system for providing two-way communications between a plurality of serially connected terminal complexes and a central control station. The communications system including a plurality of time multiplexed channels each having switching or multiplexing information, control information and data to effect bidirectional data flow between the terminal complexes and the central.

3,639,695

SYSTEMS FOR PROCESSING FREQUENCY MODULATED SIGNALS

Jean Bertheas, Paris, France, assignor to Thomson-CSF

Filed Feb. 4, 1969, Ser. No. 796,503
Claims priority, application France, Feb. 5, 1968, 138699
Int. Cl. H04b 1/66
U.S. Cl. 179—15.55 R 15 Claims



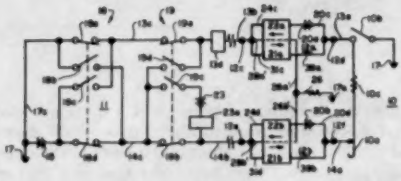
The invention relates to devices for either compressing or extending the duration of frequency modulated pulses. The signal-processing system of the invention comprises a converting device for modifying the duration of a signal without affecting its waveform and another transmission device having dispersive characteristics for further modifying the duration of the envelope of said signal. Since the above-mentioned converting device is capable of supplying more than one signal for each processed pulse, gating means are coupled to the converting means for gating out unwanted signals.

3,639,696

MULTISTATE VOLTAGE BOOSTER CIRCUIT FOR TELEPHONE SYSTEMS

Charles W. Chambers, Jr., Amherst, Ohio, assignor to Lorain Products Corporation

Filed Apr. 1, 1969, Ser. No. 811,992
Int. Cl. H04b 3/00
U.S. Cl. 179—16 F 14 Claims



A circuit for increasing the flow of telephone line current in telephone systems which utilize reverse battery supervision and the grounding of the telephone line at the subscriber station for supervisory or control purposes. Power booster networks connected in series with respective sides of a telephone line each include a semiconductor switch for controlling the flow of current toward the subscriber station and a semiconductor switch for controlling the flow of current away from the subscriber station. A DC auxiliary source is connected in series with one switch in each power booster network. The conduction of the different switches is controlled in accordance with the voltages present in the telephone system to direct telephone line current flow through that one of the DC auxiliary sources which is in power aiding relationship to said current flow despite changes in the direction of current flow in one or both sides of the telephone line.

3,639,697

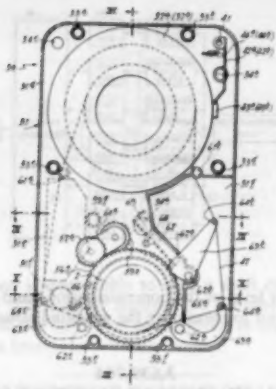
MAGNETIC TAPE CARTRIDGE CONTAINING ENGAGING MEANS FOR ROTARY HEAD

Kazumasa Koguma, Tokyo; Hiroshi Takeuchi, Kanagawa-ken, and Yuichi Kanamaru, Saitama-ken, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 16, 1970, Ser. No. 11,750
Claims priority, application Japan, Feb. 28, 1969, 44/15781; Apr. 23, 1969, 44/31402
Int. Cl. G11b 23/04
U.S. Cl. 179—100.2 Z 22 Claims

A magnetic tape recording and reproducing device having a tape guide drum and a rotary magnetic head for recording and reproducing signals on a tape wrapped about the drum is provided with a magnetic tape cartridge adapted to be removably mounted on the device and having a housing containing the tape and an assembly by which, when the cartridge is removed from the device, a loop of the tape is

securely supported and, when the cartridge is mounted on the device, such tape loop is released to engage in wrapped



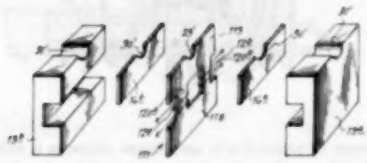
relation about the guide drum for recording or reproducing operations.

3,639,698

DUAL-GAP MAGNETIC FLUX RESPONSIVE HEADS

Saburo Uemura, Kanagawa-ken; Toyohiko Fuse, and Yoshitaka Hashimoto, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 12, 1969, Ser. No. 875,924
Claims priority, application Japan, Dec. 28, 1968, 44/1592
Int. Cl. G11b 5/30
U.S. Cl. 179—100.2CF 15 Claims



In a dual-gap magnetic flux responsive head comprised of a saturable magnetic core with coils thereon and a pair of magnetic yokes forming a loop path for magnetic flux in connection with the core disposed therebetween and having dual gaps defined between one end of the core and the adjacent ends of the yokes; the core includes a first member having a lateral portion or crosspiece at one end from which a plurality of parallel, spaced-apart legs integrally extend to receive the coils wound apart from the core, and a second member in the form of a crosspiece joined to the free end portions of the legs after the coils have been mounted on the latter.

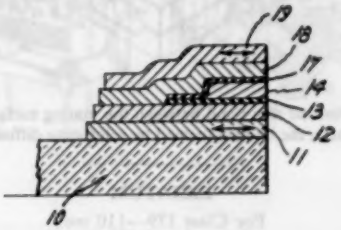
3,639,699

MAGNETIC TRANSDUCER HAVING A COMPOSITE MAGNETIC CORE STRUCTURE

Jerome J. Tiemann, Schenectady, N.Y., assignor to General Electric Company

Filed Feb. 27, 1970, Ser. No. 14,945
Int. Cl. G11b 5/22
U.S. Cl. 179—100.2 C 7 Claims

A magnetic transducer for read-write applications is disclosed in which a composite core having two closely spaced legs is provided with each leg having one layer of magnetic material of higher permeability and lower saturation flux density than the second layer of that leg. The read-write conductor means is positioned between the two legs and is thereby inductively coupled to the core. The higher permeability layer is narrow in a direction perpendicular to both the length of the leg and the thickness of the layer, is adjacent



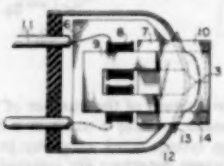
the conductor means and is saturated at flux densities encountered in writing so that the wider lower permeability outer layers of the two legs are effective during writing and the higher permeability narrower layers are effective or dominant during reading. In a modification, a composite shim is employed in the gap of a more conventional stacked lamination head to obtain some of the advantages of the present invention.

3,639,700

MULTIELEMENT MAGNETIC HEAD OF ALL OXIDE OR SINTERED QUALITIES

Takashi Shiraki, Neyagawa; Sadao Masuoka, Hirakata, and Minoru Morita, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 16, 1970, Ser. No. 19,946
Claims priority, application Japan, Mar. 22, 1969, 44/22487
Int. Cl. G11b 5/14
U.S. Cl. 179—100.2 C 4 Claims



A multielement magnetic head for magnetic recording and/or reproducing operations. The tape-engaging face of the head includes magnetic cores each having a gap, preformed sectioned spacers of nonmagnetic material surrounding the magnetic cores, and a shield plate of magnetic material disposed between the adjacent cores. The materials of all the members composing the tape-engaging face are sintered oxides.

3,639,701

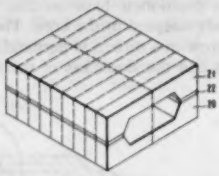
MAGNETIC RECORDING HEAD HAVING A NONMAGNETIC FERRITE GAP

Duane R. Secrist, and Harold L. Turk, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 2, 1970, Ser. No. 51,928
Int. Cl. G11b 5/14, 5/42
U.S. Cl. 179—100.2 C 12 Claims

A magnetic head assembly is claimed. The magnetic head assembly comprises a pair of magnetic ferrites having mating

surfaces and a transducing gap comprising a nonmagnetic crystalline ceramic, which may particularly be a nonmagnetic



ferrite, formed as a bond between the mating surfaces. More particularly, the bond is formed by solid-state diffusion.

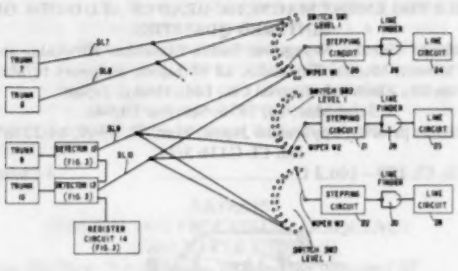
ERRATUM

For Class 179—110 see:
Patent No. 3,639,679

3,639,702
COMMUNICATION SYSTEM TRAFFIC SURVEY ARRANGEMENT

Harold K. Thompson, San Anselmo, Calif., assignor to American Telephone and Telegraph Company, New York, N.Y.

Filed Aug. 19, 1970, Ser. No. 65,164
Int. Cl. H04m *3/22, 3/36*
U.S. Cl. 179—175.2 C **20 Claims**



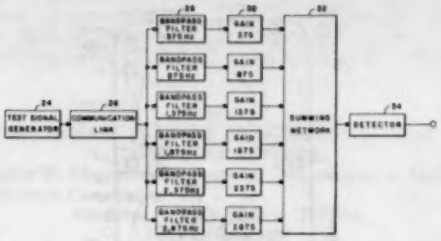
In order to obtain a count of the number of ineffectual attempts which are made to seize a trunk in a direct progression communication system trunk subgroup in which all the trunks are busy, current detectors are inserted into the path between the hunting switch stepping relay of each selector level to be studied and the sleeve leads of the ninth (next to last) and tenth (last) trunks. The current detectors are arranged such that in normal operation when the associated trunk is activated the detector remains off. However, when the selector switch steps past a busy trunk the current from the stepping relay enables the detector. Circuitry is provided to insure that a count will be recorded only during the hunting interval of the selector switch and not during the release interval.

3,639,703
METHOD AND MEANS FOR MEASURING WEIGHTED NOISE IN A COMMUNICATION LINK

Gerald T. Bergemann, and Ernest N. Dulaney, both of Marion, Iowa, assignors to Collins Radio Company, Dallas, Tex.

Filed Apr. 16, 1969, Ser. No. 816,728
Int. Cl. H04b *3/46*
U.S. Cl. 179—175.3 **7 Claims**

Disclosed is a means for measuring weighted noise in a link having a test signal spectrum concurrently present including filter means, attenuation means and summing means. Oscillator means and modulator means may be included to increase

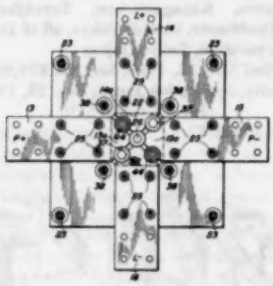


the frequency level of the communication band at the output of the link prior to measuring the weighted noise.

3,639,704
AUTOMATIC CURRENT-REVERSING SWITCH

Gilbert L. Alinder, Minneapolis, Minn., assignor to Clinton Supply Co., Chicago, Ill.

Filed May 26, 1970, Ser. No. 40,660
Int. Cl. H01h *67/20*
U.S. Cl. 200—1 V **12 Claims**



A current-reversing switch having four angularly disposed bus bars separated at the inner ends thereof. A power-actuated switch subassembly including a reciprocable shaft carrying switching contacts disposed on opposite sides of the bus bars. The switching contacts are disposed out of phase so that in one position of the reciprocable shaft the contacts on one side of the bus bars are operative to effect a current flow in one direction and in a second position on the opposite side the contacts are operative to reverse the current flow through the bus bars.

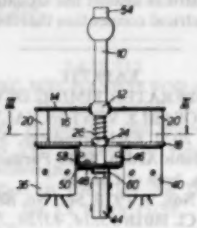
3,639,705
JOYSTICK CONTROL SWITCH

Wilfred H. G. Rayner, London, England, assignor to Clarke and Smith Manufacturing Company Limited

Filed Apr. 13, 1970, Ser. No. 27,745
Claims priority, application Great Britain, Apr. 17, 1969, 19,617/69
Int. Cl. H01h *25/04*
U.S. Cl. 200—6 A **9 Claims**

In a joystick control switch having an operating lever rotatable about a point intermediate the length of the lever, the lever is positively indexable in each of a plurality of positions of rotation by means of a collar slidably mounted on the lever and resiliently biased into engagement with a gate member defining the plurality of positions of rotation, and in

each of the plurality of positions of rotation the lever operates a depressible-plunger-type switch by contact of the lever with the plunger either directly or through the intermediary of a single lever member. A button located in one



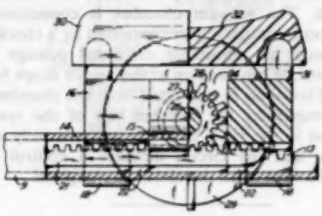
end of the lever is depressible to slide a shaft extending longitudinally of the lever to depress the plunger of an additional switch at the other end of the lever, in one position of rotation of the lever.

3,639,706

RECIPROCATING SWITCH MECHANISM WITH IMPROVED THUMBWHEEL ACTUATOR INCLUDING RACK AND PINION STRUCTURE

Harold L. Purdy, Hummelstown, Pa., assignor to Stackpole Carbon Company, St. Mary's, Pa.

Filed Mar. 15, 1971, Ser. No. 124,377
Int. Cl. H01h *3/08, 15/16*
U.S. Cl. 200—17 R **8 Claims**



A slide is movable lengthwise of a housing to move contact means therein along conducting means. Secured to the housing is a stationary rack bar that is longer than the housing and supports a carrier movable along the bar. A rack bar, which is movable lengthwise along the stationary bar and carrier, is connected with the slide for moving it. Rotatably mounted on the carrier is a pair of rigidly connected coaxial gears, one of which is smaller than the other. The large gear meshes with the stationary rack bar and the smaller gear meshes with the movable rack bar. When the gears are rotated, the one engaging the stationary bar will move the carrier along the bar, and the other gear will move the movable bar along the stationary bar a shorter distance than the carrier moves so that the slide will be moved only the shorter distance.

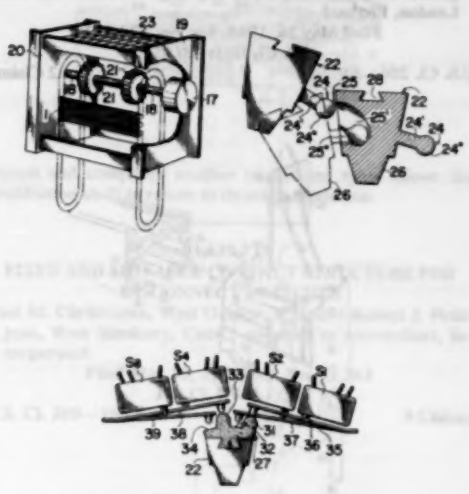
3,639,707

TIMER SWITCH APPARATUS WITH IMPROVED FLEXIBLE CHAIN WITH CODED MOVABLE PINS

Hirotugu Takano, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 6, 1970, Ser. No. 25,820
Claims priority, application Japan, Apr. 21, 1969, 44/30938
Int. Cl. H01h *7/00;* **D04b** *15/66;* **D03c** *15/02*
U.S. Cl. 200—33 C **4 Claims**

A numerical control apparatus for use in an automation such as an automatic positioning apparatus which automatically positions the locations for boring, parts mounting or cutting. In this numerical control apparatus, a command



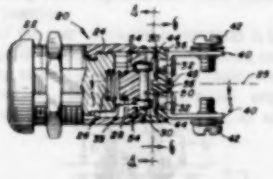
signal for controlling the automation is generated by actuation of a multiplicity of microswitches by code pins which are sequentially moved to their microswitch actuating positions.

3,639,708

ROTARY SWITCH LOCK

Stanley C. Wolniak; Herbert J. Kincaid, and Marshall A. Johnson, all of The Illinois Lock Co. 301 West Hintz Road, Wheeling, Ill.

Filed Aug. 13, 1970, Ser. No. 63,559
Int. Cl. H01h *27/00*
U.S. Cl. 200—44 **16 Claims**



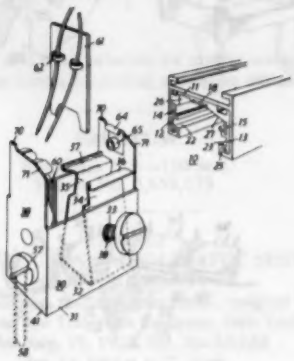
A key-operated rotary switch lock having movable roller contacts which roll along the surface of terminal contacts upon making contact therewith. The terminal contacts are mounted to, and project outwardly from, an insulator surface. The roller contacts comprise annular discs rotatably mounted on an elongated shaft which in turn is mounted for rotation about an axis normal to both the shaft axis and the insulator surface for translating the roller contacts to and away from the terminal contacts. A spacer member projects outwardly from the insulator surface along the axis of switch rotation to maintain a clearance between the roller contacts and the insulator surface.

3,639,709

OUTPUT ADAPTOR FOR ELECTRIC DISTRIBUTION TRACKS

Derek James Hart, and Robert Davis, both of London, England, assignors to British Lighting Industries Limited, London, England

Filed May 26, 1969, Ser. No. 827,822
Int. Cl. H01r 33/30
U.S. Cl. 200—51 2 Claims



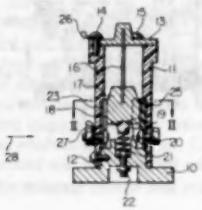
An output adapter intended for use with electricity distribution tracks provided with exposed track conductors has an on-off switch and a resilient clamp which can be moved outwardly from the adapter to engage a track and lock the adapter thereto in a position in which the contacts of said switch can be moved to the "on" position in abutment with the track conductors.

3,639,710

TRIGGER SWITCH FOR MOTOR VEHICLE SAFETY DEVICES

Takashi Haruna, Yokosuka, and Akira Shimano, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 19, 1971, Ser. No. 116,962
Claims priority, application Japan, Mar. 18, 1970, 45/26023
Int. Cl. H01h 35/14
U.S. Cl. 200—61.48 9 Claims



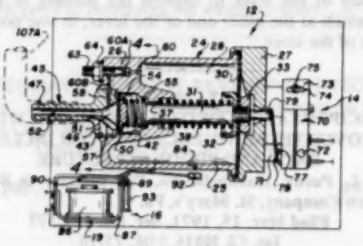
A trigger switch mechanism for motor vehicle safety devices which senses deceleration of a given magnitude resulting from a collision of the motor vehicle in order to actuate the safety devices. The mechanism comprises an upright cylinder within which an electrically conductive rockable weight is normally kept aligned with respect to the surrounding cylinder in a depending manner by a rodlike spring and a coiled spring. An arcuate contact is provided on the inner wall of the upright cylinder in front of the rockable weight at a suitable space therefrom. An arcuate damper is also provided on the inner wall of the upright cylinder opposite to the arcuate contact in such a manner as to partially surround the rockable weight thereby serving to absorb the usual shocks and vibrations of the rockable weight developed during operation of the vehicle. In operation, if the trigger switch mechanism is subjected to deceleration of a given magnitude resulting from a collision, then the rockable weight swings and strikes against the arcuate contact, thereby establishing an electrical connection therebetween.

3,639,711

VACUUM-OPERATED TIMING DEVICE WITH SOLENOID-CLOSABLE VENT IN VALVE CHAMBER

Leslie H. Jordan, 2021 East Broadway, Vancouver, British Columbia, and John Arden, 6049 Portland Ave., Burnaby, British Columbia, both of Canada

Filed Nov. 9, 1970, Ser. No. 88,060
Int. Cl. H01h 35/34, 43/28, 7/02
U.S. Cl. 200—83 H 2 Claims



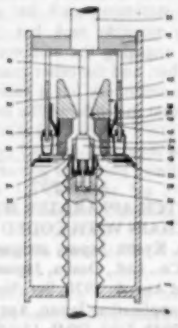
A timing device having a vacuum chamber enclosing a diaphragm which is mechanically connected to a switch in an electric circuit. The vacuum chamber is connected to a source of vacuum through a port controlled by a check valve and also through an adjustable restricted passage which bypasses the port. When vacuum at the source drops below a predetermined level, air is evacuated from the chamber after a delay determined by the selected size of the restricted passage. A vent in the valve chamber wall normally is open to atmosphere and the circuit includes a control device which closes the vent when the circuit is energized.

3,639,712

GAS BLAST CIRCUIT INTERRUPTER HAVING CONDUCTING ORIFICE MEANS

Georges Balmat, Grenoble, and Jean Jaillet, Saint-Egreve, both of France, assignors to Merlin Gerin, Grenoble, France

Filed July 13, 1970, Ser. No. 54,229
Int. Cl. H01h 33/70
U.S. Cl. 200—148 A 20 Claims



A puffer-type circuit interrupter having a composite orifice member with a restricted inner opening defining a takeover

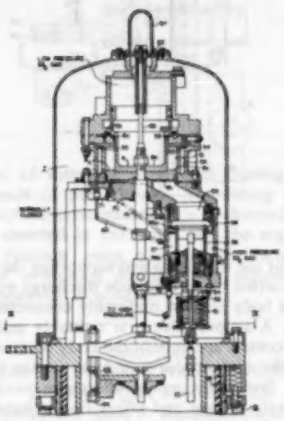
arcing contact. In order to prevent the production of a great quantity of ionized gas the arc length is limited and arc drawn between a pair of separable contact rods within the orifice member is transferred to the takeover arcing contact to cause the extinction of the arc by cross blasting the constant length arcing gap.

3,639,713

OPERATING MECHANISM FOR A CIRCUIT INTERRUPTER

William H. Fischer, Pittsburgh, and Wayne S. Aspey, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 10, 1968, Ser. No. 782,631
Int. Cl. H01h *35/38*
U.S. Cl. 200—148 R 13 Claims



A dual-acting piston operable within an operating cylinder is mechanically connected to the moving contact structure of a circuit breaker. The piston has a portion constantly acted upon in the closing direction by a high-pressure operating fluid. A large portion of the piston structure is at low pressure, and the opposite face of the piston structure is alternately pressurized or exhausted to effect, respectively, an opening or a closing operation of the circuit breaker.

A portion of the piston structure fits into a recess thereby affording a shock-absorbing function during the closing operation. Another portion of the piston structure traps high-pressure operating fluid so as to constitute a shock absorber during the opening operation of the interrupter.

In the case that a gas is used, which tends to liquefy, provision is made for the removal of the liquefied gas during the operation of the mechanism.

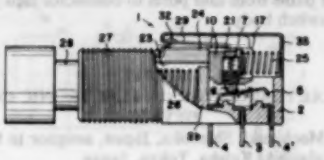
3,639,714

PUSHBUTTON ALTERNATE ACTION SWITCH WITH PUSHBUTTON SHAFT UNCONNECTED TO ALTERNATE ACTION ACTUATOR BLOCK

Hiroji Fujimoto, and Kenji Nakakura, both of Kawasaki, Japan, assignors to Fujisoku Electric Co., Ltd., Kanagawa-ken, Japan

Filed May 15, 1970, Ser. No. 37,805
Int. Cl. H01h *13/56, 13/38*
U.S. Cl. 200—153 J 8 Claims

A pushbutton switch of snap-action type completes a circuit on the first push and holds the circuit in locked condition while allowing the pushbutton shaft to return to its original position. On a second push, the switch breaks the



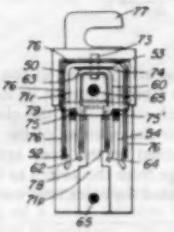
circuit and completes another circuit and again allows the pushbutton shaft to return to its original position.

3,639,715

FIXED AND MOVABLE CONTACT STRUCTURE FOR DISCONNECT SWITCHES

Paul M. Christensen, West Orange, N.J., and Robert J. Petitjean, West Simsbury, Conn., assignors to Arrow-Hart, Incorporated

Filed May 15, 1970, Ser. No. 31,363
Int. Cl. H01h *1/54*
U.S. Cl. 200—166 E 9 Claims



An insulation carrier of one or more pairs of similar U-shaped contact members is movable toward and from one or more pairs of spaced parallel flat fixed contact blades so that a pair of said blades are engageable and disengageable by a pair of said movable contact members, with the ends of the one of the U-shaped members engaging the outside surfaces of said fixed contact blades while the ends of the other of the U-shaped members engage the inside surface of said blades, causing electromagnetic forces incident to heavy current flow to be concentrated around the movable contacts and to create a pinching effect against the fixed contact blades in fully engaged position.

The outer of the pair of movable contacts is longer so that its ends engage the fixed contact blades first, creating (prior to the pinching effect) a weakening of their pressure against the fixed contact blades during initial engagement to facilitate movement into full engagement in case of heavy current flow.

3,639,716

TRANSFER SWITCH PACKAGE ASSEMBLY

Harry R. Rasmussen, 422 Fife Heights Drive N.E., Tacoma, Wash.

Filed Mar. 29, 1971, Ser. No. 128,758
Int. Cl. H01h *9/02*
U.S. Cl. 200—168 B 4 Claims

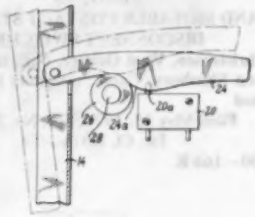
A transfer switch package assembly employs a printed circuit panel support buried in the assembly base and support-

ing on one end a plurality of binding posts and at the other metal-surrounded holes for quick and accurate connection of conductive paths from said posts to connector taps or pins on a transfer switch body.

3,639,717
SWITCH ACTUATOR FOR AN ELECTRONIC COOKING DEVICE

Masayuki Mochizuki, Shizuoka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 8, 1970, Ser. No. 70,294
Int. Cl. H01h 3/02
U.S. Cl. 200—172 A 2 Claims

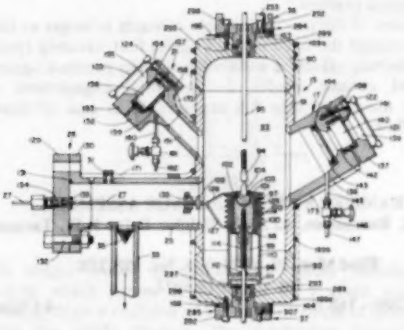


A spring biased door arm pivoted at one end to a door for an enclosure includes a protrusion on its lower side normally engaging a door switch to put it in the closed position. The protrusion responds to the opening of the door to ride on a roller normally contacted by the door arm, for causing the protrusion to disengage from the switch to deactuate a device such as a magnetron used for electronic cooking.

3,639,718
PRESSURE- AND TEMPERATURE-CONTROLLED CRYSTAL GROWING APPARATUS

Roger A. Castonguay, Salem; Bernard C. Hanley, Chestnut Hill; Francis J. Mallahan, Woburn, and Joseph F. Wenckus, Needham, all of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Filed June 15, 1970, Ser. No. 46,096
Int. Cl. H05b 5/00
U.S. Cl. 219—10.67 20 Claims

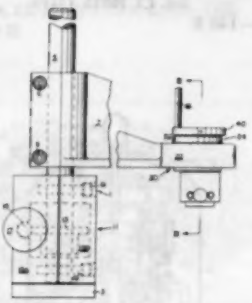


Furnace assembly providing a working volume the pressure in which may range from 10^{-8} torr to 100 atmospheres. Controlled temperatures up to 4,000° C. are attainable. Two load-bearing rods extending into the furnace are rotated and moved along their vertical axes over a wide speed range. Means are provided continuously to indicate the precise position of each rod, to monitor the operation within the furnace by TV, and to control the operations within the furnace from a remote location.

3,639,719
ELECTRODE GUIDE

Italo Caroli, Westmount, Quebec, Canada, assignor to DBM Industries Limited

Filed Dec. 9, 1969, Ser. No. 883,384
Claims priority, application Canada, Mar. 25, 1969, 046,694
Int. Cl. B23k 9/16
U.S. Cl. 219—69 E 8 Claims

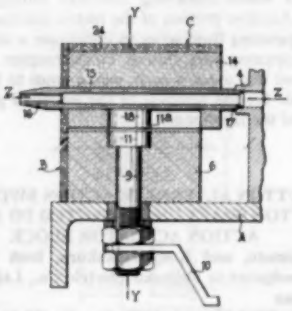


Apparatus for use in guiding and supporting the free end of an electrode carried by an electrode discharge machine, and having a main body portion preferably connected to a supporting stand. A support sleeve is rotatably and adjustably mounted in a central aperture in the body portion. A yoke is supported in the support sleeve and has means for positioning the same. Preferably, guide rollers are provided on the yoke to guidingly engage and effect fine adjustment of the electrode. An adapter head can also be provided on the yoke to accommodate electrodes of quite small dimensions.

3,639,720
METALLIZING GUN

Roger Malivoir, Pont-a-Mousson, France, assignor to Centre de Recherches de Pont-a-Mousson, Pont-a-Mousson, France

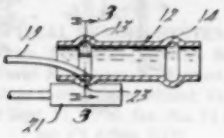
Filed Aug. 24, 1970, Ser. No. 66,508
Claims priority, application France, Sept. 30, 1969, 6933299
Int. Cl. B23k 9/04
U.S. Cl. 219—76 6 Claims



Metallizing gun employing an electric arc and having two wire guides and a compressed air nozzle fixed to a head. The

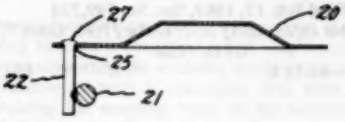
head is detachably fixed to a support by a single screw. The wire guides are adapted to align with a wire-feeding device which feeds two wires through the wire guides. The wire guides are adapted to be connected to an electric power supply when the head is fixed to the support. The wire guides and nozzle can be easily replaced by substituting a replacement head having wire guides and a nozzle for the old head.

3,639,721
METHOD OF INSTALLING BRAZING RINGS
Edward F. Hubbel, Howell, Mich., assignor to Aeroquip Corporation, Jackson, Mich.
Filed Nov. 13, 1970, Ser. No. 89,382
Int. Cl. B23k *11/10*
U.S. Cl. 219—91 **1 Claim**



A method of installing segmented brazing rings in the recessed beads of pipe fittings. The fitting is cleaned to eliminate surface contamination, a preformed brazing ring segment is inserted in the bead, and the segment is spot-welded in position using a capacitor discharge impulse welder. The remaining brazing ring segments are then similarly spotwelded in position.

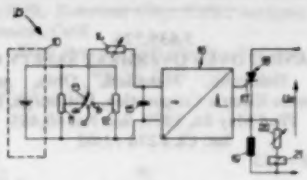
3,639,722
PROCESS FOR JOINING WIRES TO SHEETS OF REFRACTORY MATERIALS
Gasper Pagnotta, and Allan J. Kiesler, both of Schenectady, N.Y., assignors to General Electric Company
Filed June 17, 1970, Ser. No. 46,972
Int. Cl. B23k *9/00*
U.S. Cl. 219—127 **3 Claims**



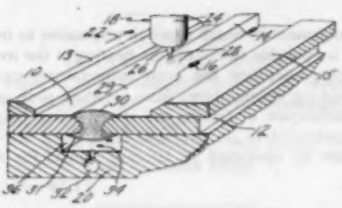
A tungsten reflector for a regenerative lamp is secured to a tungsten support rod by cross wire welding a molybdenum wire to the support rod and inserting the free end of the wire into an opening in the sheet and finally arc spot welding the free end of the wire to the side of the sheet facing away from the support rod.

3,639,723
WELDING CONTROL
Horst Keller, Kottingen/Wissen (Sieg); Gunter Hahn, Hausen, both of Germany, assignors to Messer Griesheim GmbH, Frankfurt am Main, Germany
Continuation-in-part of application Ser. No. 720,984, Apr. 12, 1968. This application June 4, 1970, Ser. No. 43,503
Int. Cl. B23k *9/06*; **G05f**
U.S. Cl. 219—131 R **8 Claims**

A welding control prevents crater formation at the beginning or end of a welding operation by obtaining a constant increase and decrease in the welding current at the beginning and end of the welding operation.

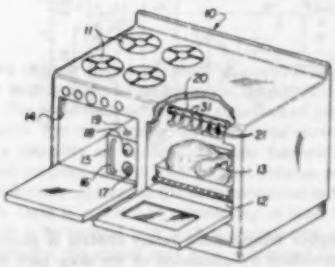


3,639,724
WELDING THORIA DISPERSED NICKEL
Francis C. Gerath, Canton, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed June 2, 1970, Ser. No. 42,638
Int. Cl. B23k *9/00*
U.S. Cl. 219—137 **12 Claims**



Sheets of thoria dispersed nickel are joined by a filler material consisting of a solid solution hardened alloy using inert gas arc welding techniques. The filler material is sized to provide the desired weld bead configuration and to maintain a sufficient separation between the sheet edges during joining to allow continuous welds of indefinite length; additionally the filler material is compatible with subsequent thermal processing of the sheets during the application of a chromium outer coating. The final coated assemblies have strong welds, free of porosity, and agglomeration of thoria is also avoided.

3,639,725
STEAM-GENERATING APPARATUS
Thomas J. Maniscalco, 7 Orian Pl., Glen Cove, N.Y.
Filed Mar. 3, 1971, Ser. No. 120,449
Int. Cl. A21b *1/02*
U.S. Cl. 219—401 **5 Claims**



Apparatus particularly useful for preparation of foods wherein a portable steam-generating unit is adapted for cooperation with a proximate dry heat oven chamber to pro-

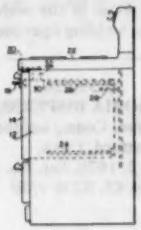
vide steam for controlled periods of time, and at controlled pressures.

3,639,726

SELF-CLEANING OVEN OVERHEAT SAFETY CONTROL

Calvin J. Holtkamp, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 26, 1970, Ser. No. 40,485
Int. Cl. F27d *11/02*
U.S. Cl. 219—413 8 Claims



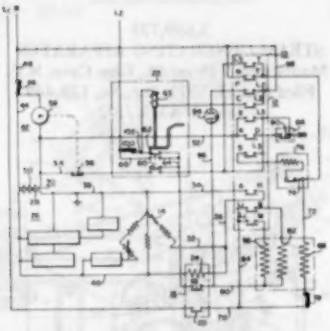
An arrangement in which a switch responsive to oven temperatures is operable to cut off the heating in the oven when in a cooking operation the oven temperatures exceed the normal cooking temperatures from a failure such as a thermostat malfunction or failure, the safety switch being effectively recalibrated to an overheat limit for a self-cleaning temperature by operation of latching means for the oven door.

3,639,727

POSITIVE TEMPERATURE CONTROL DOOR LOCK SYSTEM

James A. Leach, Shelby, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 28, 1970, Ser. No. 58,793
Int. Cl. H01h *37/00*
U.S. Cl. 219—491 8 Claims



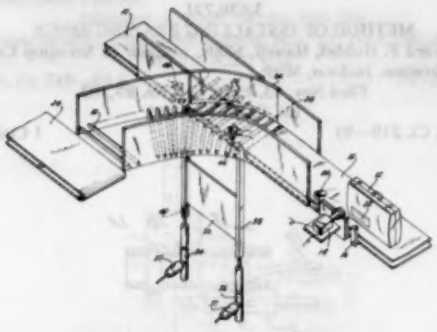
An oven upper temperature safety control is provided in the instant invention by utilization of the door lock thermostat during the cooking modes of the oven to prevent the temperature of the oven reaching an unsafe level if failure of the temperature sensor control system occurs. The operation of the door lock thermostat as a temperature safety control is positively interrupted by actuation of the door locking system for the oven.

3,639,728

MATERIAL CONTAINER SORTING APPARATUS AND METHOD

Fredric E. Helfand, and Marvin B. Baer, both of Cocoa Beach, Fla., assignors to Scan Systems, Inc.

Filed July 17, 1970, Ser. No. 55,884
Int. Cl. G06k *7/10*; B07c *5/34*
U.S. Cl. 235—61.11 E 15 Claims



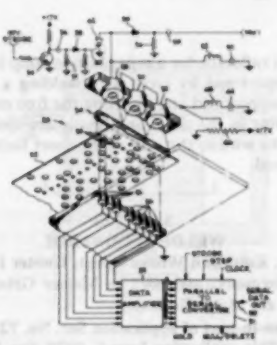
A method and apparatus for sorting, routing and otherwise categorizing material containers, such as luggage, freight, cargo and the like, comprising conveyor means upon which to place the material containers, labels adapted to be secured to the material containers and having alphanumeric code information thereon, electro-optical conversion means positioned adjacent the conveyor means, photoelectric means positioned adjacent the conveyor means and the electro-optical conversion means for conditioning a programmed logic system for operation. The electro-optical conversion means is adapted to read the alphanumeric code to produce an output signal to be fed to the programmed logic system which is in turn connected to and adapted to activate electromechanical equipment means to sort, route, weigh, tabulate, or otherwise categorize the individual material containers placed on the conveyor means.

3,639,729

DATA READING APPARATUS

Ray A. Marshall, Park Ridge, Ill., assignor to SCM Corporation, New York, N.Y.

Filed Feb. 17, 1969, Ser. No. 799,733
Int. Cl. H04l *15/18*; H01j *1/52*; G01n *21/30*; G06k *7/14*; G11b *19/00*
U.S. Cl. 235—61.11 E 15 Claims



Data groups are read from a perforated medium by an array of light emitting diodes. Light from the diodes passes through a cylindrical lens, through the perforated medium,

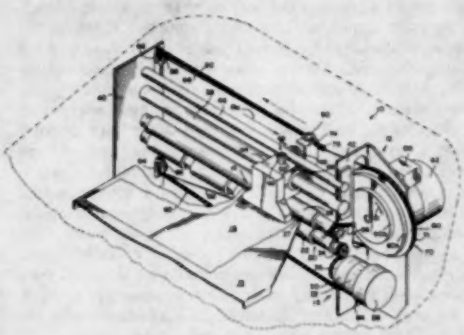
and onto an array of photodetectors which detect the perforations. Illumination power for the light emitting diodes comes from a capacitor which is connected to the diodes by a controlled rectifier. The data reading process and the motion of the medium are synchronized either by controlling tape motion with a switch-tail ring counter controlled stepping motor, or by inductively sensing magnetic elements which move synchronously with the perforated medium. Data bits retrieved from the medium are placed into a shift register, and are then shifted out of the register in the form of a teleprinter code. A new data group is automatically read as soon as this shift register becomes empty. The shift register may be easily reprogrammed so as to generate any desired teleprinter code. A NULL and DELETE data group detection circuit erases these groups from the shift register and thereby greatly speeds up the teleprinter code generation process.

3,639,730

OPTICAL READER SYSTEM

Roy F. Higginbotham, Plantation; Fred D. Blonder, Ft. Lauderdale, and David E. Snyder, Hollywood, all of Fla., assignors to Datatype Corporation, Miami, Fla.

Filed Sept. 11, 1970, Ser. No. 71,505
Int. Cl. G06k 7/10
U.S. Cl. 235—61.11 E **19 Claims**



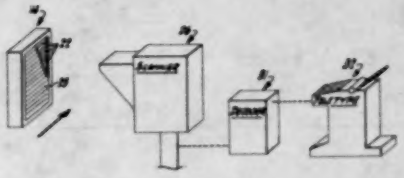
A system for optically reading data printed in transversely extending lines on a document comprising a scanning head, means for supporting the scanning head for transverse movement relative to such a document, first drive means for reciprocating the scanning head on the supporting means, second drive means for moving such a document longitudinally relative to the scanning head, the second drive means including friction drive roller means for engaging and moving such a document, a motor, electrically operated clutch means for drivingly connecting the roller means to the motor, and electrically operated brake means for stopping the roller means, and control means for the first and second drive means. The control means includes means for optically detecting a line of data on such a document and operating the clutch means and brake means to stop such longitudinal movement of such a document and to start movement of the scanning head away from its initial starting position. The first drive means includes a drive pulley, at least one idler pulley, flexible means trained about the pulleys, a continuously running drive motor, and clutch means for drivingly connecting the drive pulley to the drive motor. The flexible means is fastened to one point on the periphery of the drive pulley and the scanning head is fastened to a point on the flexible means. A coiled tension spring is provided for returning the scanning head to its initial starting position when the drive pulley is disengaged from the drive motor.

3,639,731

ANALYSIS SYSTEM FOR MOBILE EQUIPMENT

Jon J. McNeill, Redwood City, Calif., assignor to Textron Inc., Belmont, Calif.

Filed Dec. 4, 1969, Ser. No. 882,206
Int. Cl. B61l 1/00
U.S. Cl. 235—61.11 E **3 Claims**



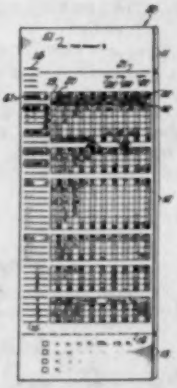
An analysis and indicating equipment for mobile equipment such as locomotives or the like providing visual indications of equipment conditions and inclu;ing exterior indication for scanning and remote readout at distant locations.

3,639,732

DATA CONTROL DEVICE

Norman Robert Crain, Huntington Beach, and Donald E. Rea, Santa Ana, both of Calif., assignors to Documentor Sciences Corporation, Santa Ana, Calif.

Filed Feb. 2, 1970, Ser. No. 7,576
Int. Cl. G06k 19/06
U.S. Cl. 235—61.12 **11 Claims**



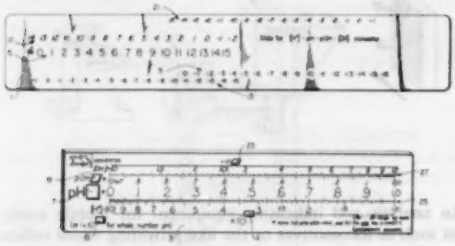
A data control device adapted for controlling data in connection with an optical or magnetic detection device is disclosed. The main body of a paper structure of predetermined dimensions has a plurality of horizontal rows extending across a plurality of vertical columns formed by pairs of separated contrast stripes. One vertical column provides timing or reference signals for the data contained in the horizontal rows. Data is entered by connecting at least two vertical stripes in a horizontal row with a connecting indicia. The space between the stripes may have numbered indicia means for indicating the value entered. In one embodiment, portions of the control device are provided with detection means for absorbing energy of an incident light source, thus, providing means for optical detection. The control device is particularly adaptable for use in restaurants and hotels and similar business where bill totalization is required.

3,639,733

NEGATIVE LOGARITHM-DECIMAL CONVERSION

Gustav Olof Larson, Big Rapids, Mich.

Filed Aug. 18, 1970, Ser. No. 64,752
Int. Cl. G06c 27/00
U.S. Cl. 235—69 16 Claims



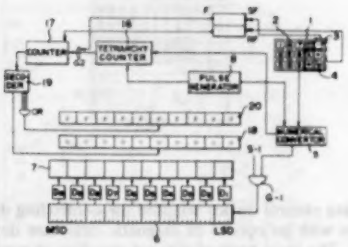
Devices preferably having two scales which relate whole number negative logarithms to a negative power of 10 which is one more than the whole number, and two scales which relate logarithms less than 1 to a decimal expression of 10 times the reciprocal of the antilogarithm. The devices are useful as inexpensive and convenient tools to convert values of pH and other figures similarly expressed.

3,639,734

POSITIONAL INDICATING DEVICE FOR NUMERICAL VALUE

Takehiko Kimura, Tokyo, and Yoshiaki Niizawa, Kawasaki-shi, both of Japan, assignors to Canon Camera Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1965, Ser. No. 517,251
Claims priority, application Japan, Dec. 30, 1964, 39/74770
Int. Cl. G06k 15/18
U.S. Cl. 235—92 EA 4 Claims



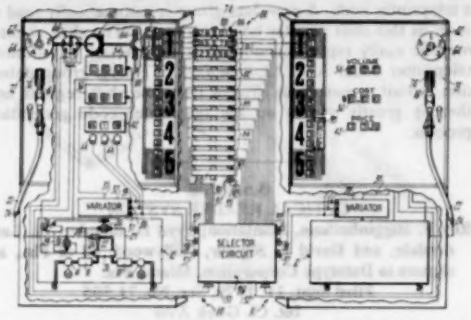
A numerical value indicator comprising an indicating device for grouping the digits of a numerical value into groups of "n" digits with respect to the variable position of the decimal point. A decimal point indicator is operated to indicate the position of the decimal point within a numerical value, means being provided for selecting from a plurality of digit grouping indicators the one indicator which includes the digit grouping indicator positioned at the same location as the operated decimal point indicator.

3,639,735

MULTIPLE PRODUCT FLUID DISPENSING SYSTEM

John H. Bickford, Middletown, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

Filed Aug. 17, 1970, Ser. No. 64,302
Int. Cl. B67d 5/22, 5/06
U.S. Cl. 235—94 16 Claims



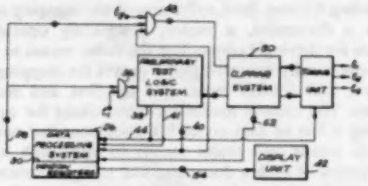
A multiple product gasoline dispensing pump with two multiple product gasoline delivery subsystems independently operable from opposite sides of the pump for selectively dispensing a plurality of different grades of gasoline and for computing the cost of the gasoline dispensed in accordance with the established unit volume price for the selected grade. A single-price programming unit comprising three rotary price decades for each grade is provided for both delivery subsystems for establishing and posting the unit volume prices. The price decades are coaxially mounted for rotation about a vertical axis and each comprises a number wheel with two numeral sequences of 0–9 providing for posting the unit volume prices on the opposite sides of the pump. The price decades have binary switches providing encoded signals of the established unit volume prices and are connected via a selector circuit for setting each delivery subsystem to compute the cost of gasoline dispensed in accordance with the established unit volume price for the selected grade.

3,639,736

DISPLAY WINDOWING BY CLIPPING

Ivan E. Sutherland, 69 University St., Salt Lake City, Utah

Filed Nov. 19, 1969, Ser. No. 878,018
Int. Cl. G06f 7/38
U.S. Cl. 235—152 11 Claims



A computation system is disclosed, as for interpolating lines with specific application to the selection of a portion of a line which is to be presented in a fragmentary display. The system as disclosed eliminates those portions of lines that are contained within a drawing (as defined in computer storage) which lie outside a rectangular "window" (defining a portion of the drawing) by computing vector coordinates for the ter-

minal ends (start and end) of the visible portions of each such lines. The described embodiment utilizes a binary system of shifting coordinate differential data to clip and divide the lines which are defined by their end points. Repetitive operations attain the desired definition.

3,639,737

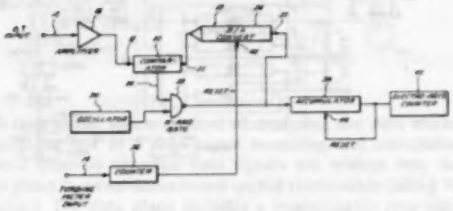
APPARATUS FOR MEASURING THE CHANGE IN THE THERMAL ENERGY OF A FLOWING FLUID

Fount E. McKee, Houston, Tex., assignor to Delta-X Corporation, Houston, Tex.

Filed Oct. 16, 1970, Ser. No. 81,386

Int. Cl. G01k *17/08*

U.S. Cl. 235—151.3 **5 Claims**



An apparatus for measuring the change in the thermal energy of a flowing fluid in which the flow rate and differential temperature are measured by providing an accurate measurement with an analog converter receiving the differential temperature signals and providing pulses from an oscillator based upon the change in thermal energy each time a predetermined volume of fluid is measured. An analog comparator receiving a differential temperature signal from a temperature measuring means and also receiving a signal from a digital to analog converter which is reset each time a predetermined volume of fluid is measured by the flow rate measuring means with an oscillator providing output pulses, the output from the oscillator being controlled by the comparator and being connected to a counting means when the differential temperature signal is greater than the signal from the converter whereby the counting means gives a measurement in the change of thermal energy of the flowing fluid.

3,639,738

METHOD AND DEVICE FOR RECORDING SPECTRA

Gunther R. Laukien, Am Silberstreifen, Karlsruhe-Forchheim, Germany

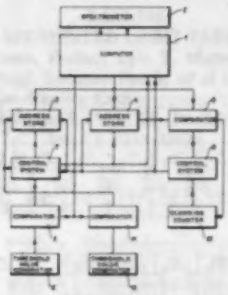
Filed Oct. 30, 1969, Ser. No. 872,712

Claims priority, application Germany, Nov. 2, 1968, P 18 06 615.5

Int. Cl. G01d *1/14*

U.S. Cl. 235—151.35 **19 Claims**

An arrangement for controlling the scan of a spectrometer employs a computer and associated equipment for initiating one complete scan of the spectrometer. During this scan where partial ranges of signal values are detected, said ranges being of particular interest, repeated scans of these ranges occurs until a sufficient number to provide useful information is obtained and, thereupon, the continuous scan of the spectrometer is continued. The equipment employed includes address registers and comparison circuitry for indicating and storing the addresses of those signal values which the computer has selected after a determination has been made that a partial range exists. Where signal values far exceed the



threshold value which defines a partial range, no repeated scanning is employed or is necessary.

3,639,739

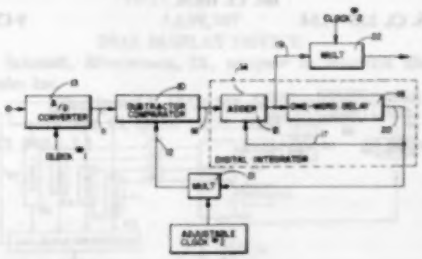
DIGITAL LOW-PASS FILTER

Roger M. Golden, Santa Monica, and Stanley A. White, Yorba Linda, both of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Filed Feb. 5, 1969, Ser. No. 796,679

Int. Cl. G06f *15/34*

U.S. Cl. 235—152 **9 Claims**



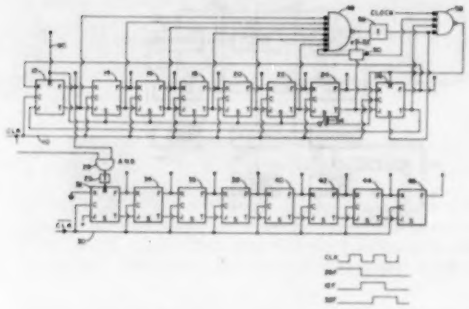
Means for low-pass filtering sampled digital data comprising a recirculating accumulator operated at a preselected sampling rate and having an output; and comparator means having a first sampling input coupled to an output of said accumulator and further having a second sampling input adapted to be connected to a digital signal to be filtered, an output of said comparator means being fed to an input of said accumulator, and the sampling rate of said first input of said comparator being substantially slower than that of said second input. The low relative sampling rate of the feedback arrangement serves to reduce the band-pass of the low-pass filter, while selective variation of such sampling rate correspondingly varies such band-pass.

3,639,740

RING COUNTER APPARATUS

Raymond P. Escoffier, Wylie, and Milton R. Watson, Richardson, both of Tex., assignors to Collins Radio Company, Dallas, Tex.

Filed July 15, 1970, Ser. No. 54,959
Int. Cl. G11c *29/00*; G06f *11/00*
U.S. Cl. 235—153 6 Claims



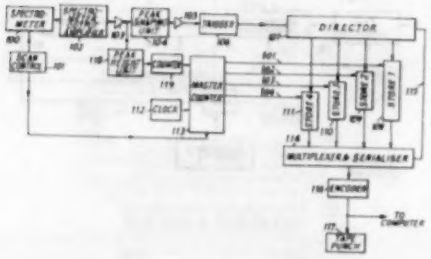
A plurality of low-speed flip-flops connected to provide high-speed ring-counter-type operation through the use of parallel operating ring counter and shift register stages. The circuit also comprises means for assuring one and only one logic 1 in the device.

3,639,741

AUTOMATIC HIGH-RESOLUTION MASS MEASUREMENT

Alan Carrick, Teddington, England, assignor to National Research Development Corporation

Filed July 25, 1969, Ser. No. 844,983
Claims priority, application Great Britain, July 26, 1968, 35,894/68
Int. Cl. H03k *13/02*
U.S. Cl. 235—154 9 Claims



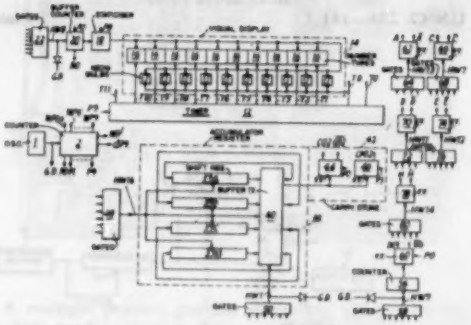
A hybrid analogue-digital analyzer for the online digitization of electrically recorded mass spectra. The device, which does not incorporate a digital computer, accurately selects peak maxima to provide triggering pulses for timing circuitry, and uses directly controlled buffer storage to reduce the effective rate of data acquisition to that of the average speed of the associated output channel. The analyzer is primarily intended to provide records of complete high resolution mass spectra suitable for off-line computer processing. For real time production of reduced and annotated spectra the analyzer may be used as an active interface directly coupled to a computer.

3,639,742

NUMBER POSITIONING DISPLAY FOR ELECTRONIC CALCULATING MACHINES

James John Drage, and Norbert Kitz, both of Uxbridge, Middlesex, England, assignors to Bell Punch Company Limited, Uxbridge, Middlesex, England

Filed Feb. 28, 1969, Ser. No. 803,144
Claims priority, application Great Britain, Mar. 1, 1968, 10,002/68
Int. Cl. G06f *7/46*
U.S. Cl. 235—160 7 Claims



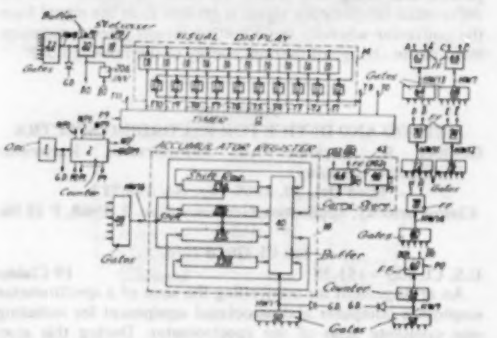
A calculating system employing a numerical display is described with a plurality of number display tubes each having a corresponding register for storing the number to be displayed. Numbers may be transferred from one register stage to another and the value of each of the digits is determined to present the highest significant digit at a predetermined stage by way of transfer in the stages.

3,639,743

CALCULATING MACHINE WITH KEY-CONTROLLED GATES SETTING FUNCTION COUNTER STATES

Norbert Kitz, Uxbridge, Middlesex, England, assignor to Bell Punch Company Limited, London, England

Filed July 29, 1969, Ser. No. 845,831
Int. Cl. G06f *7/48*
U.S. Cl. 235—160 12 Claims



Key-controlled electronic calculating apparatus has a function state counter controlling various arithmetic calculations. The states are established by function keys gating signals to set the counter into predetermined states. Each function key produces a signal of predetermined duration that may com-

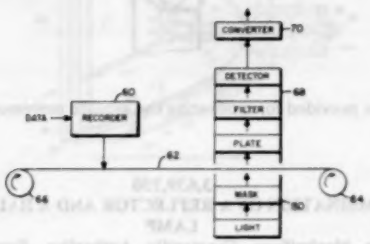
prise a sequence of pulses. The counter states may be controlled by feedback gating signals from a previous counter state.

3,639,744

MAGNETOOPTIC PHASE CORRELATOR

Fred G. Hewitt, St. Paul, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 17, 1969, Ser. No. 885,782
Int. Cl. G06g 7/19, 9/00
U.S. Cl. 235—181 28 Claims



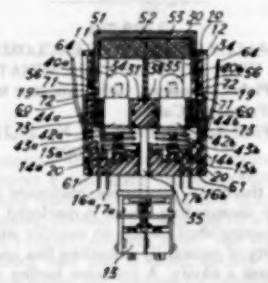
A data plane and a method of analyzing the data stored therein for use in a data signal recording and correlating system whereby received data signals are written into the data plane in a two-dimensional spatial relationship (along X, Y axes). The data plane includes a magnetizable recording medium which provides, upon readout, a Faraday rotation of orthogonally incident light beams that spatially conform to the received data signals. The degree of Faraday rotation is a function of the degree or level of the partial switching of the recording medium's magnetization through the thickness thereof and is, along the orthogonally oriented X, Y axes of the data plane, a linear function only if the received data signals are of a prescribed waveform. With such a linear Faraday rotation, the parallel light beams are passed through a quarter wave plate, an analyzer filter, and suitable optics to be focused upon a detector array. The detector array presents, as an output, signals that are indicative of the X, Y axes parameters.

3,639,745

MOUNTING ARRANGEMENT FOR ELECTRICAL DEVICE

Mitsuyuki Shiki, Kyoto-fu, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed June 12, 1970, Ser. No. 45,646
Claims priority, application Japan, June 13, 1969, 44/56132
Int. Cl. F21v 33/00
U.S. Cl. 240—2 SP 15 Claims



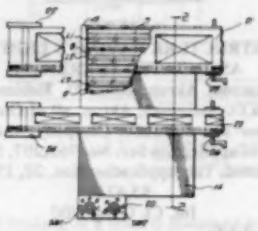
A mounting arrangement for an electrical device in which a housing therein accommodating a pushbutton-type actuator unit is detachably arranged at a predetermined position in the mounting opening on a panel through resilient legs integrally formed at one end of resitient plate units of which resilient mounting members at its other end are detachably inserted in the corresponding slits formed in the sidewalls of said housing.

3,639,746

SEGMENTED LIGHT TABLE

Thomas F. Adams, Encino; Lyle T. Mattes, Torrance, and Poul B. Roulund, Redondo Beach, all of Calif., assignors to FMA, Inc., Los Angeles, Calif.

Filed May 5, 1969, Ser. No. 821,914
Int. Cl. F21v 33/00
U.S. Cl. 240—2 R 10 Claims



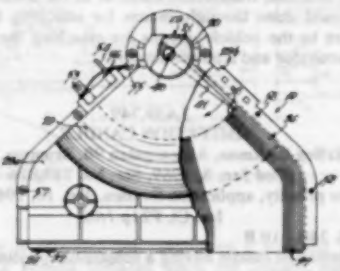
An array of selectively energizable, elongated lamps that are arranged in parallel relationship. The lamps are disposed in individual compartments formed in a housing. Each compartment has a light reflective wall that opens toward a light diffusing plate covering one side of the housing. When a lamp is energized, it illuminates a segment of the plate that coincides in area with the opening of the corresponding compartment. One switch controls the energization of successive numbers of lamps from one edge of the array. Another switch controls the deenergization of any single lamp between the edges of the array.

3,639,747

DIAL DISPLAY DEVICE

Hans Schmidt, Riverwoods, Ill., assignor to Warwick Electronics Inc.

Filed June 11, 1969, Ser. No. 832,342
Int. Cl. G01d 11/28; H03j 1/04
U.S. Cl. 240—2.1 16 Claims



A dial display for providing an indication corresponding to an input signal such as corresponding to the tuning of a radio device. The dial display utilizes a series of light transmitting elements for piping light from a light transfer member to a front display position. The light transmitting elements are

grouped to have a front portion thereof effectively define a visually observable dial indicator. The light transfer member is selectively positionable by means of a suitable indicating mechanism such as a meter movement. The transfer member receives light from a light source to produce a localized high level of light emission from the dial display corresponding to the position of the indicating mechanism. The light source is further utilized to provide a background low level illumination emission from the dial display which may be of a color differing from that of the localized high level emission. The transfer member may comprise a piped light member, an apertured member, a filter member, etc., to provide the localized indication in the dial display. The transfer member may also take the form of an opaque element and in effect cast a shadow on the light transmitting elements as an indication of its position. The light transmitting elements may be formed in groups for facilitated assembly.

3,639,748

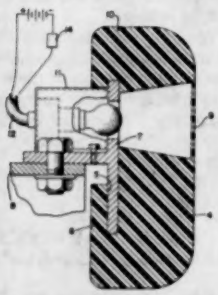
BUMPER STRUCTURE HAVING A LIGHT FIXTURE ASSOCIATED THEREWITH

Charles J. Pearson, Akron; Keith D. Robinson, Mogadore, and William O. Sassaman, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of application Ser. No. 763,207, Sept. 27, 1968, now abandoned. This application Nov. 27, 1970, Ser. No. 93,422

Int. Cl. G60g *1/00*

U.S. Cl. 240—7.1 G **2 Claims**



This invention relates to a bumper structure having a light fixture associated therewith where the bumper body has one face of resilient, translucent material in the areas where the light would shine through, means for attaching the bumper structure to the vehicle, means for attaching the lights to a signal activator and a power supply.

3,639,749

IMITATION CANDLE

Bengt Erling Beckman, Alstensgatan 90, Bromma, Sweden

Filed Jan. 8, 1969, Ser. No. 789,816

Claims priority, application Sweden, Jan. 10, 1968, 309/68

Int. Cl. F21p *1/02*

U.S. Cl. 240—10 B **8 Claims**

An imitation candle having a substantially cylindrical body with an electric incandescent lamp mounted therein such that the bulb protrudes from one end of the body. The lamp is suspended within the body by an elastic material, a plurality of arms, or a spring, and is capable of substantially free arcuate movement about a point in the proximity of one end of the body. The degree of arcuate movement is limited by stops engaging the lamp, and the lamp is locked against movement by a latch that operates in response to the cessation of electric power to the lamp to seize the lamp. A motor

can be provided for motivating the arcuate movement of the lamp.

3,639,750

COMBINATION OF A REFLECTOR AND A HALOGEN LAMP

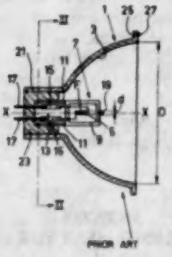
Edwin Maximiliaan Constantijn Anthonijsz, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 4, 1969, Ser. No. 873,885

Claims priority, application Netherlands, Nov. 9, 1968, 6816006

Int. Cl. F21l *15/02*; G02b *5/10*

U.S. Cl. 240—11.4 R **2 Claims**



A condenser mirror formed as a glass socket defining an ellipsoidal reflector, with a slot present in the socket in which the pinch part of a halogen filament lamp is secured. This socket includes a number of axially extending external reinforcement ribs or otherwise thickened portions.

3,639,751

THERMALLY DISSIPATIVE ENCLOSURE FOR PORTABLE HIGH INTENSITY ILLUMINATING DEVICE

Marlowe A. Pichel, Altadena, Calif., assignor to Pichel Industries, Inc., Pasadena, Calif.

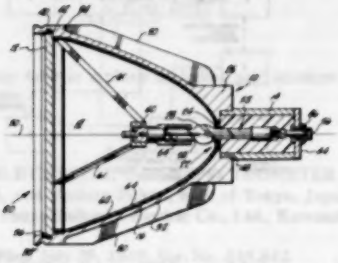
Filed Apr. 10, 1970, Ser. No. 27,213

Int. Cl. F21v *29/00*

U.S. Cl. 240—47 **9 Claims**

A sealed, thermally dissipative enclosure for a portable high-intensity illuminating device is disclosed. The enclosure includes a housing shell having an exterior surface equipped with a plurality of outwardly extending fins and which is configured to form a cavity. A reflector having a specular mirrorlike surface is situated in the cavity of the housing shell. An aperture, extending through the housing shell and the reflector and generally aligned along the longitudinal axis of the enclosure, is provided to accommodate a light source. A

cup-shaped receptacle is included to provide a lamp socket, or other power connection, and to seal the aperture by having a portion thereof secured to the shell housing. The cavity is sealed by a faceplate which is securely retained in the



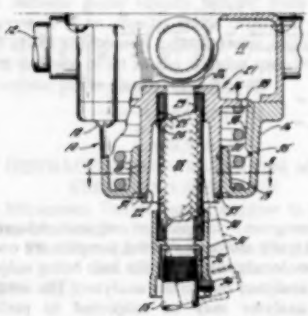
mouth of the cavity. The dissipation of thermal energy is facilitated by positioning the reflector, in the cavity of the housing shell, to obtain optimal transfer of thermal energy from within the enclosure through the housing shell to the surrounding atmosphere.

3,639,752

EXPLOSIONPROOF FLEXIBLE FIXTURE HANGER

Arthur I. Appleton, 1701 Wellington Ave., Chicago, Ill.

Filed Nov. 10, 1969, Ser. No. 875,112
Int. Cl. F21s *1/02*
U.S. Cl. 240—78 R 10 Claims



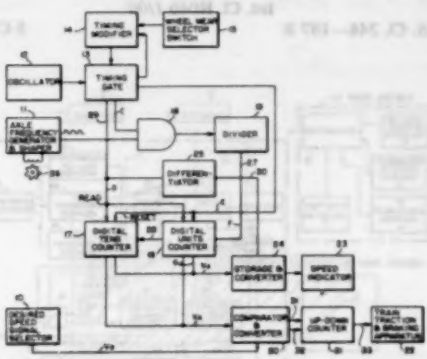
An explosionproof fixture hanger is disclosed which is adapted to support a depending explosionproof fixture in a manner providing resilient cushioning and lateral flexibility. An annular housing, formed for mounting on a junction box, is fitted with a laterally resilient stem. The stem protrudes through a housing hub and is telescopically carried on a resilient member within the housing for limited axial movement. The inner surface of the housing hub and the outer surface of the stem define a pressure-dissipating explosionproof joint. A lighting fixture is mounted at an opposite end of the resilient stem.

3,639,753

SYSTEM FOR GOVERNING THE SPEED OF RAILWAY VEHICLES

Simon Reich, New York, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed Sept. 15, 1969, Ser. No. 857,974
Int. Cl. B61l *3/00*; G01p *3/12*
U.S. Cl. 246—182 C 5 Claims



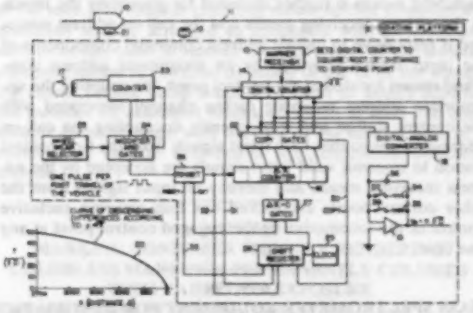
Traction and braking of a train is governed by comparing a desired speed signal with digital speed signals that are periodically generated indicative of actual speed of the train. The digital speed signals are attained by counting frequency pulses of an axle driven frequency generator during successive time gate periods. Means is provided for modifying the time duration of the time gate in accordance with changes in diameter of a wheel of the vehicle. The digital output is in miles per hour and is also used to control a speed indicator.

3,639,754

SYSTEM FOR COMPUTING A STOPPING PATTERN SIGNAL FOR A VEHICLE

Vincent P. Kovalcik, and Robert F. Anderson, both of Rochester, N.Y., assignors to General Signal Corporation, Rochester, N.Y.

Filed Dec. 24, 1969, Ser. No. 887,851
Int. Cl. B61l *3/08*
U.S. Cl. 246—182 B 6 Claims



A system is provided for computing a stopping pattern signal for a vehicle initiated upon the vehicle passing a wayside marker in approach of a stopping point. A digital storage is provided for storing a number corresponding to the square root of the distance from the marker to the stopping point. A delta counter is provided for periodically updating the digital storage as the vehicle progresses from the wayside marker toward the stopping point, and a digital-to-analog converter is provided for converting the digital storage into

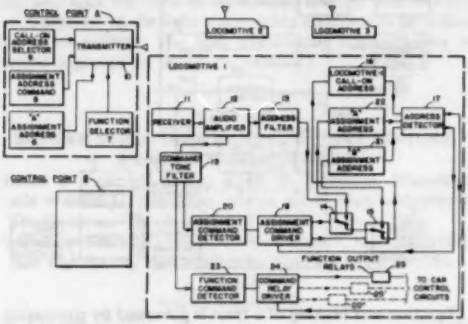
an analog signal which is combined with a constant to generate a pattern signal.

3,639,755

REMOTE CONTROL OF A LOCOMOTIVE

Warren R. Wrege, Rochester, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed Jan. 2, 1970, Ser. No. 341
Int. Cl. H04b *1/00*
U.S. Cl. 246—187 B **5 Claims**



A communication apparatus has been provided for transmitting multicomponent input signals over a common carrier from a plurality of control stations to one or more remotely controlled locomotives each having a unique call-on address means. The call-on address means is responsive only to input signals having the same call-on address component and each control station includes transmitting means for selectively transmitting control signal components for governing the operation of the locomotive and the call-on addresses. The improvement includes means at each control point coupled to the transmitting means for providing a unique assignment address component to the input signal indicative of the associated control point. Address receiving means on the locomotive having multiple channels is selectively responsive to the associated assignment address and provides a manifestation of the identity of the source of the input signals. Switching means is further included for governing the inputs to the address receiving means and the call-on address means and is responsive to unique address command components of the input signals provided by an assignment address command means located at the control point, for coupling the appropriate address receiving means channel associated with the control station and subsequently decoupling the call-on address means so that only input signals from the first control station to transmit valid input signals are accepted by the address receiving means and thereby all input signals from the other control points are locked out thus assuring exclusive control of the locomotive by the engaged control point at any one time.

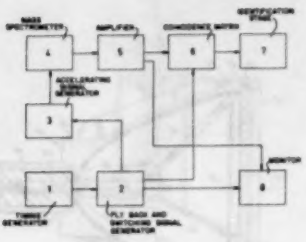
3,639,756

MASS SPECTROMETER EQUIPMENT FOR AUTOMATIC GAS ANALYSIS

Hansrichard Schulz, Villingen am Black Forest, Germany, assignor to Saba Schwarzwalder Apparate-Bau-Anstalt August Schwer Sohne GmbH, Villingen am Black Forest, Germany

Filed Jan. 17, 1969, Ser. No. 792,042
Claims priority, application Germany, Jan. 20, 1968, P 16 73 060.2
Int. Cl. H01j *39/36*
U.S. Cl. 250—41.9 G **12 Claims**

Mass density signals furnished by a mass spectrometer, each signal corresponding to the mass density of particles with a particular mass number, are distributed to a number of circuit locations and stored. Upon occurrence of signals of a sufficient magnitude at selected ones of these locations a signal is generated by an AND circuit, which may start an alarm. The circuit locations are selected to correspond to mass density signals resulting from the presence of particles found in poison gas.

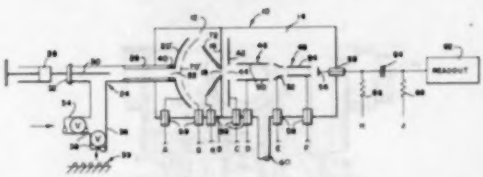


3,639,757

APPARATUS AND METHODS EMPLOYING ION-MOLECULE REACTIONS IN BATCH ANALYSIS OF VOLATILE MATERIALS

David I. Caroll, Lantana; Roger F. Wernlund, Lake Worth, and Martin J. Cohen, West Palm Beach, all of Fla., assignors to Franklin GNO Corporation, West Palm Beach, Fla.

Filed Aug. 4, 1969, Ser. No. 847,115
Int. Cl. H01j *39/34;* **B01d** *59/44*
U.S. Cl. 250—41.9 TF **43 Claims**



Discrete (nanogram) samples of organic materials are volatilized, and trace molecules of the samples are converted to ions by ion-molecule reactions, the ions being subject to a drift field and analyzed by a mass analyzer. The ions passed to the mass analyzer may be subjected to preliminary separating, filtering and focusing. The mass analyzer output device may include an electron multiplier and a multichannel analyzer. Mass analyzer is performed under high-vacuum conditions, while ion formation and drift take place under relatively high-pressure conditions.

3,639,758

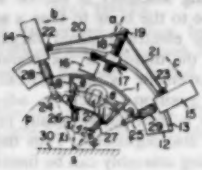
X-RAY STRESS MEASURING APPARATUS

Yoshihiro Shimura, Tokyo, Japan, assignor to Rigaku Denki Company Limited, Tokyo, Japan

Filed Feb. 3, 1970, Ser. No. 8,300
Claims priority, application Japan, Mar. 7, 1969, 44/16875
Int. Cl. G01n *23/20*
U.S. Cl. 250—51.5 **6 Claims**

The present invention provides an X-ray stress measuring apparatus wherein two X-ray detectors are simultaneously

movable on a circular arc about the incident point of X-rays



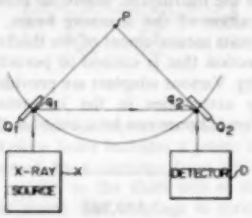
from an X-ray tube in a plane including said incident point and two targets.

3,639,759

DOUBLE CRYSTAL X-RAY SPECTROMETER

Yoichi Goshi, and Yoshiro Fukao, both of Tokyo, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed July 29, 1969, Ser. No. 845,842
Claims priority, application Japan, Aug. 2, 1968, 43/54845
Int. Cl. G01n *23/22*
U.S. Cl. 250—51.5 4 Claims



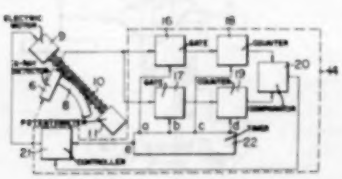
In an X-ray spectrometer comprising a first crystal, a source of X-rays to project X-rays upon the first crystal, a second crystal disposed to receive X-rays reflected by the first crystal and a detector disposed to receive X-rays reflected by the second crystal, the second crystal is revolved about a definite point equally spaced from the first and second crystals at an angular speed of θ, and the detector is revolved about the second crystal at the angular speed of θ, about the definite point at the angular speed of θ and about the first crystal at the angular speed of θ.

3,639,760

X-RAY DIFFRACTION APPARATUS FOR MEASURING STRESS IN A SPECIMEN

Mamoru Mizunuma, Tokyo, Japan, assignor to Rigaku Denki Company Limited, Tokyo, Japan

Filed Nov. 13, 1969, Ser. No. 876,258
Int. Cl. G01n *23/20*
U.S. Cl. 250—51.5 2 Claims



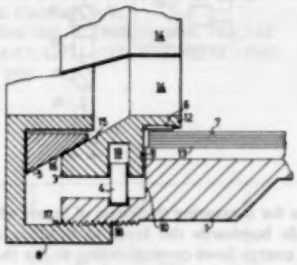
The present invention provides a stress continuously recording apparatus comprising an X-ray tube, two diffracted X-ray detectors and two automatic tracing mechanisms and continuously recording the internal stress of a specimen at its various points by moving it.

3,639,761

FILM CASE FOR X-RAY CAMERA

Michele Morichetto, Spanga, Sweden, assignor to Incentive Research & Development AB, Bromma, Sweden

Filed Aug. 11, 1970, Ser. No. 62,941
Claims priority, application Sweden, Aug. 12, 1969, 11222/69
Int. Cl. G01n *23/20*
U.S. Cl. 250—68 6 Claims



The present invention relates to a film casing for an X-ray camera, the casing being of the type generally constituting a cylindric tube into which a film carrier of an X-ray picture is to be introduced for exposure in close contact with the internal surface of the tube. On both sides of the space for a film introduced into the tube for exposure, as seen in the axial direction of the tube, the casing comprises an annular clamping means to hold edges of the film in position inside the tube, said clamping means comprising a flange protruding axially into the tube from the end thereof and being provided with slots allowing for radial widening and compressing of the clamping means for fastening and loosening, respectively, a film introduced between the flange and the internal surface of the tube. The annular clamping means further comprise an abutment surface arranged to cooperate with an abutment surface of the tube to restrict the movement of the annular clamping means in the axial direction of the tube, the clamping means further being cooperative with an axially adjustable member by abutment means, of which at least one constitutes an acute angle with the axis of the tube as seen in a radial plane through said axis in the longitudinal direction thereof.

3,639,762

MARKING CONSUMER ITEMS BY RENDERING COLORLESS MARKINGS PERMANENTLY COLORED WITH RADIATION EXPOSURE

Burton B. Hughes, 47 Little Fox Lane, Wilton, Conn.

Continuation-in-part of application Ser. No. 563,340, July 1, 1966, now abandoned. This application Feb. 14, 1969, Ser. No. 801,244
Int. Cl. B44d *1/50*
U.S. Cl. 250—71 9 Claims

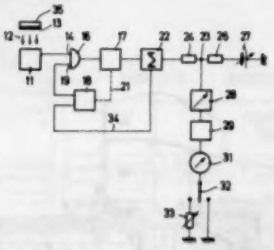
Consumer items are marked with two or more colorless markings each of which can be rendered colored by exposure to different levels of radiation. Exposure to one level of radiation selectively changes one marking to a substantially permanently colored, visible state without affecting the colorless state of the other markings.

3,639,763

DEVICE FOR MEASURING THE THICKNESS OF METALLIC LAYERS UTILIZING BETA RAY BACKSCATTERING

Ludwig Streng, 7036 Schonaich, Fulkenstr. 9, Germany

Filed Jan. 22, 1970, Ser. No. 4,903
Claims priority, application Germany, Nov. 25, 1969, P 19 59 008.0
Int. Cl. G01t *1/17*; G01n *23/06*
U.S. Cl. 250—83.3 D 7 Claims



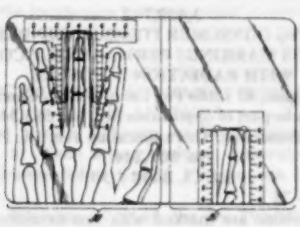
A device for measuring thickness of layers when a radioactive nuclide bombards the layer to produce an irradiation having an energy level corresponding to the thickness of the layer. A detector absorbs radiation backscattered from the layer and possibly from a carrier material if present, and produces output pulses at a rate between that corresponding to a layer of zero thickness and that corresponding to a quasi-endlessly thick layer. An integration stage coupled to the output of the detector produces a voltage proportional to the rate of pulses from the detector. A voltage compensation stage connected to the integration stage output produces a voltage equal to and opposite in sign with respect to the output voltage of the integration stage, which corresponds to the pulse rate of the backscattering pertaining to the zero thickness of the layer. The output voltages of the integration and voltage compensation stages are conducted at a common point which, in turn, is connected with a network controllable in its transmission gain and loss. The network is connected with an equalizer for linearizing a mathematical function which represents a family of calibration curves correlating thickness with measured backscattering. A recording device connected to the equalizer amplifier permits readings of layer thickness to be obtained.

3,639,764

BONE-DENSITY MEASURING INSTRUMENT

Robert E. Olson, Glen Ellyn, and Joseph R. Toman, Naperville, both of Ill., assignors to Packard Instrument Company, Inc., Downers Grove, Ill.

Filed Apr. 2, 1969, Ser. No. 812,657
Int. Cl. G01t *1/16*
U.S. Cl. 250—83.3 D 10 Claims



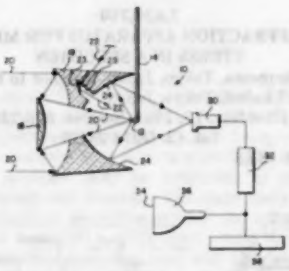
A bone density measuring instrument including a scanning assembly having means for transmitting a radiation beam through a selected bone section. The attenuated radiation beam transmitted through the bone section produces an electrical output signal representing the intensity of the detected beam. The scanning assembly is moved along a predetermined path relative to the bone to scan a selected section of the bone, with the electrical signal varying in accordance with variations in the density of the scanned bone section. The scanning movement is automatically stopped at a preselected stop position, which is adjustable, and the scanning assembly is then automatically returned to a start position, which is also adjustable. Thus the scanning movement of the scanning assembly can be limited to the selected bone section. Means are provided for returning the scanning assembly from the stop position to the start position at a rate substantially faster than the scanning rate. The electrical pulses representing the detected beam intensity are fed into a scaler which counts the pulses, and the counting operation is periodically interrupted for a brief interval to permit the accumulated count to be transferred into a buffer storage. The counting is then resumed, while the data is read out of the buffer storage means at the relatively slow rate required by the output mechanism, such as a printer, tape punch, or the like. A radiograph template is also disposed which permits two different X-rays to be made of the same bone, from two different positions, on a single radiograph film. One radiograph is used to locate the selected bone section on a screen on the front of the instrument, where an illuminated dot indicates the position of the scanning beam, and the other radiograph permits measurement of the thickness of the particular bone section that is canned to permit calculation of the bone density. Various adapters are provided for receiving different body extremities in the instrument, so that a number of different bones can be scanned in the same instrument.

3,639,765

INFRARED IMAGE CONVERTER

Marcos Kleinerman, Point Breeze, Webster, Mass.

Filed July 1, 1969, Ser. No. 838,088
Int. Cl. G01t *1/16*
U.S. Cl. 250—83.3 H 19 Claims



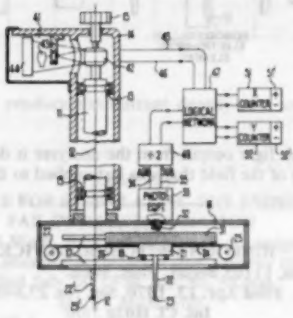
Device for converting light in the infrared portion of the spectrum into visible light based on the phenomenon of thermal quenching of visible fluorescence comprising a conversion screen which contains an ultraviolet irradiated temperature-sensitive phosphor.

3,639,766

ELECTRICAL-OPTICAL COORDINATE INSPECTION MACHINES

Harry Ogden; Neil Rutherford Laidlaw, both of Edinburgh, Scotland, and William Clarke Bradford, Islington, Ontario, Canada, assignors to Ferranti Limited, Hollinwood, England

Filed Nov. 25, 1968, Ser. No. 778,570
Int. Cl. G01d 5/38; G05b 1/06; H01l 3/14
U.S. Cl. 250—202 7 Claims



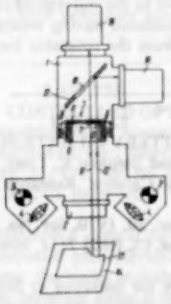
A probe structure for an inspection machine to check the location of workpiece holes includes a probe shaft having a radial arm traversed by a carriage from which the probe proper extends parallel to the shaft axis at distances measured by a pulse count. The carriage is spring urged outwardly to maintain the probe in engagement with the hole surface throughout a manual rotation of the shaft. An optical-electric transducer defines X- and Y-coordinates with the shaft axis as origin and switches the pulses to X- and Y-counters so as to cause their readings to define the coordinates of the hole center at the end of such rotation.

3,639,767

PHOTOELECTRIC TRACER COMPRISING TWO LENSES OR APERTURES LOCATED ALONG A COMMON RADIUS FROM AN AXIS OF ROTATION

Valentin Mikhailovich Sitnichenko, ulitsa, Odesskaya, 58/16, kv. 14, and Alexandr Mikhailovich Zamuruev, ulitsa, Tereshkovoi, 12, kv. 24, both of Odessa, U.S.S.R.

Filed Sept. 16, 1969, Ser. No. 858,388
Int. Cl. G01n 21/30; G06k 11/02
U.S. Cl. 250—202 2 Claims



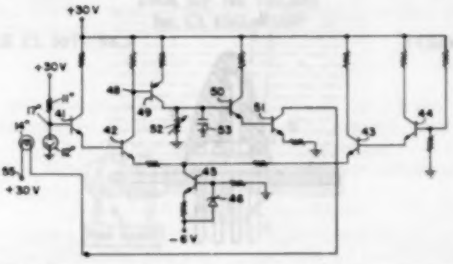
A photoelectric tracer unit is disclosed for tracing an outline or pattern, and adapted to be incorporated in the photoelectric control apparatus of a work-performing machine, such as a gas-cutting machine and the like, wherein the axes of a pair of modulating means of a modulator member lie in a plane passing through the axis of rotation of this modulator member, to one side of this axis of rotation, whereby this tracer unit is capable of supplying information representing an immediately coming change of the position of the outline being traced in respect of a pair of coordinate axes.

3,639,768

FEEDBACK CONTROLLED PHOTOSENSITIVE OBJECT DETECTING SYSTEM

Ronald A. Mancini, Riviera Beach, Fla., assignor to Corning Glass Works, Corning, N.Y.

Filed Oct. 9, 1968, Ser. No. 766,142
Int. Cl. G01j 1/32, 1/36; H05b 37/02
U.S. Cl. 250—205 1 Claim



A system for detecting the presence of an object passing between a photosensitive resistance and a light source. A DC feedback amplifier connected to the photosensitive resistance controls the intensity of the light source so that the system functions properly under wide variations in ambient conditions without requiring operator adjustments.

3,639,769

PHOTOCONDUCTIVE POTENTIOMETER USING VARIABLE TRANSMITTANCE CONTROL STRIPS

William D. Clark, 5560 Centinela Ave., Los Angeles, Calif.

Filed Apr. 10, 1969, Ser. No. 815,019
Int. Cl. H01l 15/00
U.S. Cl. 250—211 6 Claims

A light control member in the nature of a photographic wedge having varying light transmittance characteristics along its length, is interposed between a light source and a photoconductive cell. The light transmittance characteristics are made to vary along the length of the control member in accordance with a predetermined function of resistance. Means are provided to position the control member so that

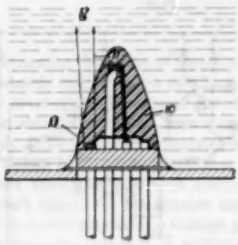
various portions thereof are placed in the light path between the light source and the cell, thereby varying the light incident on the cell in accordance with the predetermined function. In this manner, the effective resistance of the cell can be controlled in accordance with the light transmittance variation along the length of the control member, this variable resistance being usable for a desired control function.

3,639,770

OPTOELECTRONIC SEMICONDUCTOR DEVICE

Walter Zizelmann, Alpirsbach, Germany, assignor to Telefunken Patentverwertungsgesellschaft mbH, Ulm (Danube), Germany

Filed Sept. 23, 1968, Ser. No. 761,685
Claims priority, application Germany, Sept. 27, 1967, T 34891
Int. Cl. G01n 21/26, 21/46; G02b 21/00; H01j 39/02
U.S. Cl. 250—218 7 Claims



An optoelectronic or photosensitive semiconductor device in which a light-emitting element and a light-responsive element are arranged in a common casing, the degree of photocoupling between the two elements being dependent entirely on conditions exterior of the casing. In one embodiment, the two elements are embedded in a light-permeable mass, the boundary surface of which, together with a medium surrounding the mass, forms a surface whose reflection characteristic is dependent on the indices of refraction of the mass and of the medium, the elements themselves being so arranged that when the index of refraction of the medium is such that the boundary reflects the light coming from the light-emitting element, the reflected light is picked up by the light-responsive element, with the amount of light being picked up being dependent on, and thus an indication of, the medium surrounding the mass. In another embodiment, light emitted by the light-emitting element is free to exit the mass and, if reflected by an object outside the mass, is picked up by the light-responsive element.

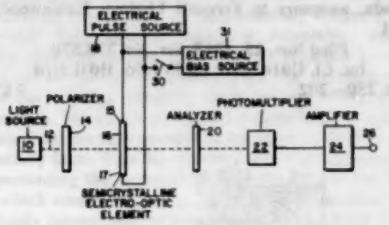
3,639,771

BISTABLE OPTICAL ELEMENTS USING TRANSPARENT FERROELECTRIC GLASS CERAMICS

Nicholas F. Borrelli, 935 West Water St., Elmira, N.Y., and Margaret M. Layton, 2970 Olcott Road, Big Flats, N.Y.

Filed Oct. 9, 1969, Ser. No. 865,141
Int. Cl. G02f 1/18
U.S. Cl. 250—225 12 Claims

A bistable light switch including a transparent ferroelectric glass-ceramic body which exhibits ferroelectric hysteresis. The body can be prepolarized so that the application of electric fields of equal amplitude but opposite polarity switches the device between two stable states which exhibit different birefringence characteristics. When such a body is disposed between a source of polarized light and a polarization



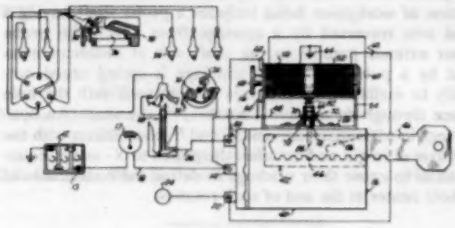
analyzer, the light output from the analyzer is determined by the polarity of the field that was last applied to the body.

3,639,772

IGNITION SWITCHING DEVICE

Zade Wilson, 11105 Belsay, Flint, Mich.

Filed Apr. 13, 1970, Ser. No. 27,648
Int. Cl. H02g 3/00
U.S. Cl. 307—10 20 Claims



An ignition switch for vehicles and the like having a housing with a rotatable lock cylinder disposed therein and movable in response to a key adapted to be inserted therein to open and close a first electrical circuit adapted to connect an ignition coil to a power source. A pair of electrical solenoids mounted on the housing are respectively operable to open and close a second electrical circuit adapted to separately connect the ignition coil to the power source, one of the solenoids being responsive to the movement of the rotatable lock cylinder, the other solenoid having means responsive to the removal of the key from the rotatable lock cylinder to energize the same.

3,639,773

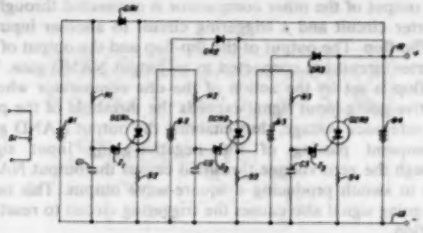
THERMAL BATTERY INITIATION SEQUENCER

Frank J. Ayd, III, and Stephen E. Long, both of Baltimore, Md., assignors to Catalyst Research Corporation, Baltimore, Md.

Filed Mar. 20, 1970, Ser. No. 21,344
Int. Cl. H02j 7/34, 9/00
U.S. Cl. 307—48 7 Claims

Electrical circuitry for initiating or firing a series of thermal batteries in sequence at predetermined time intervals, thereby enabling a series of small thermal batteries to deliver a fixed voltage output over a period of time equal to a multiple of the operating time of each individual battery. Small

batteries capable of delivering a high-current density may thus be used in place of a more expensive larger battery



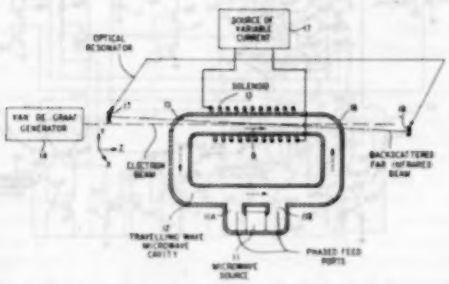
which cannot produce the current density of a smaller battery.

3,639,774

TECHNIQUE FOR STIMULATING THE EMISSION OF FAR-INFRARED RADIATION

Peter Adalbert Wolff, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 24, 1970, Ser. No. 58,004
Int. Cl. H03f 7/00
U.S. Cl. 307—88.3 8 Claims



There is disclosed a method and an apparatus for stimulating the emission of far-infrared optical radiation by backscattering microwaves from a relativistic electron beam having energy in the 1 to 10 Megaelectron-volt range and having direction along a magnetic field of magnitude chosen to make the electron cyclotron frequency approximately equal to the microwave frequency and by resonating the scattered radiation. A van de Graaf generator generates the electron beam.

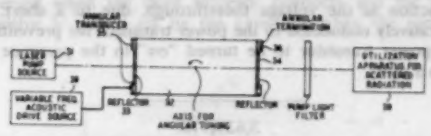
3,639,775

ACOUSTICALLY CONTROLLED OPTICAL DEVICES

Chandra Kumar Naranbhai Patel, Summit, N.J., assignor to Bell Telephone Laboratories, Inc., Murray Hill, N.J.

Filed Aug. 3, 1970, Ser. No. 60,583
Int. Cl. H03f 7/00
U.S. Cl. 307—88.3 4 Claims

The acoustically controlled optical devices disclosed employ an optically transparent piezoelectric medium, such as a β-quartz. The devices disclosed include an optical beam deflector in which the deflected beam is the second harmonic of two like-frequency input beams, which are phase-matched for generation of the second-harmonic beam propagating in the desired direction by an acoustic wave generated by an array of acoustic transducers. A second device is an optical frequency shifter employing light scattering from the mixed



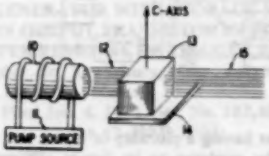
excitations called polaritons. The acoustic wave controls the frequency of the polaritons that do the light scattering.

3,639,776

LITHIUM NIOBATE HARMONIC GENERATOR AND METHOD

Homer Fay; Wilbur J. Alford, and Howard M. Dess, all of San Diego, Calif., assignors to Union Carbide Corporation

Original application June 8, 1967, Ser. No. 644,537, now Patent No. 3,528,765. Divided and this application Aug. 7, 1968, Ser. No. 750,805
Int. Cl. H02m 3/00
U.S. Cl. 307—88.3 3 Claims



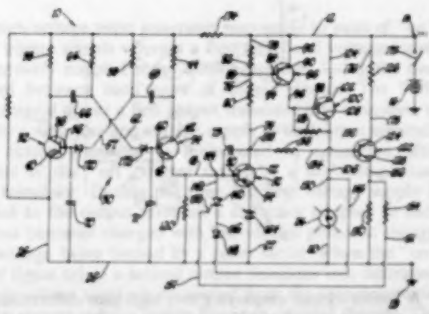
This disclosure relates to an improved harmonic generator system utilizing a lithium niobate crystal having an elevated phase matching temperature. The system is especially suited for harmonic generation of visible coherent radiation from fundamental radiation of 1.06μ wavelength. By reason of its higher phase matching temperature, the crystal can be used in the harmonic generator system at temperatures where a radiation caused optical damage does not affect the operation. A method for operating the lithium niobate harmonic generator system at the higher phase matching temperature of the crystal is also provided.

3,639,777

FLASHER CIRCUIT

John F. Bolinger, Michigan City, Ind., assignor to Meridian Industries, Inc., Southfield, Mich.

Filed June 22, 1970, Ser. No. 48,375
Int. Cl. H02h 7/20; H03k 3/282
U.S. Cl. 307—202 2 Claims



A flasher circuit has a power transistor controlling a circuit with a load therein; a multivibrator produces a timed pulse

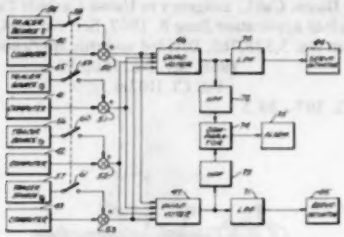
signal applied to the power transistor for turning the power transistor "on"; and additional voltage-sensing silicon-controlled rectifier means coupled to the load and sensitive to a reduction in the voltage therethrough, due to a short, is operatively connected to the power transistor for preventing the power transistor to be turned "on" in the presence of such a short.

3,639,778

TESTING A SIGNAL VOTER

Bruce R. Cereghino, Thousand Oaks, and Paul M. Rostek, Fountain Valley, both of Calif., assignors to Lear Siegler, Inc.

Filed Mar. 26, 1970, Ser. No. 22,923
Int. Cl. H03k *19/00*; **G06f** *11/08*
U.S. Cl. 307—204 **19 Claims**



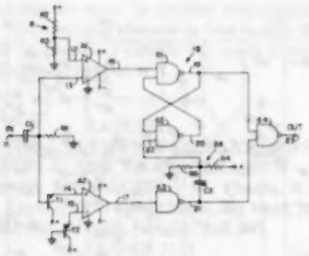
A signal voter having a plurality of inputs and a single output is tested by applying to its inputs alternating current tracer signals that vary differently as a function of time. The resultant waveform formed at the output of the signal voter responsive to the tracer signals determines whether the voter is operating normally. In one embodiment, the resultant waveforms produced at the output of two voters responsive to the same tracer signals are compared with each other to determine whether the voter is operating normally. In another embodiment, a group of logic gates responsive to a square wave signal produces binary tracer signals that reproduce the square wave signal at the output of the voter in normal operation.

3,639,779

LIMITER CIRCUIT WITH ENABLE FUNCTION

Kenneth A. Garrigus, Foxboro, Mass., assignor to G.T.E. Sylvania Incorporated

Filed Mar. 15, 1971, Ser. No. 124,241
Int. Cl. H03k *5/08*
U.S. Cl. 307—237 **7 Claims**



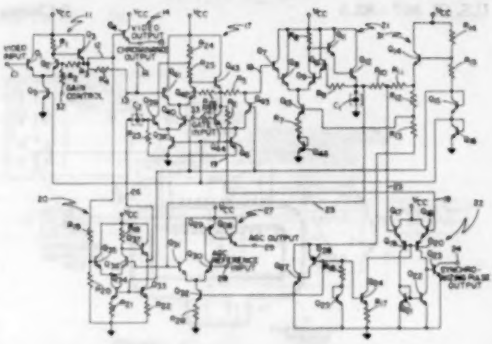
A limiter circuit employing two high-gain differential voltage comparators. A positive reference voltage is established at the noninverting input of one comparator and a reference voltage of ground is established at the inverting input of the other. Input signals are applied at the inverting input of the one comparator and at the noninverting input of the other. The output of the one comparator is connected to an input of a flip-flop composed of two cross-connected NAND gates. The output of the other comparator is connected through an inverter circuit and a triggering circuit to another input of the flip-flop. The output of the flip-flop and the output of the inverter circuit are connected to an output NAND gate. The flip-flop is set by the action of the one comparator when a positive-going input signal exceeds the threshold of the positive reference voltage, thus enabling the output NAND gate. Subsequent passing of the negative-going input signal through the zero voltage threshold causes the output NAND gate to switch producing a square-wave output. This negative-going signal also causes the triggering circuit to reset the flip-flop.

3,639,780

VIDEO SIGNALLING PROCESSING APPARATUS

Ralph E. Lovelace, North Reading, Mass., assignor to GTE Sylvania Incorporated

Original application June 24, 1968, Ser. No. 739,323. Divided and this application June 1, 1970, Ser. No. 54,068
Int. Cl. H03k *5/20*
U.S. Cl. 307—235 **3 Claims**



Video signal processing apparatus which amplifies the composite video signal from the video detector of a television receiver and charges a capacitance to the peak voltage of the synchronizing pulses. The composite video signal is compared with the voltage stored in the capacitance by a comparator and an output pulse is produced when the voltage of the composite video signal is high enough to indicate the presence of a synchronizing pulse. The composite video signal is also compared with the stored voltage by a second comparator, and a noise-cancelling signal which prevents noise from affecting the voltage stored on the capacitance of the first comparator is generated when the voltage of the composite video signal is high enough to indicate the presence of noise.

3,639,781

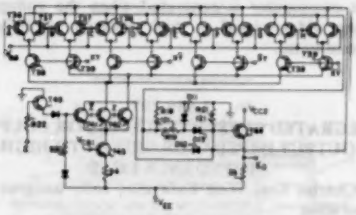
SERIES GATED MULTIPLEXER CIRCUIT

Robert R. Marley, San Jose, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Oct. 26, 1970, Ser. No. 83,999
Int. Cl. H03k *19/00*; **H04j** *3/00*
U.S. Cl. 307—243 **4 Claims**

A multiplexer of the series-gated-type wherein the minterms of two variables are generated in positive logic, each of these minterms being used to control one pair of four current

path pairs in one level of the multiplexer, is described. Each of the paths in said four pairs of paths controls a separate one of eight inputs in another level of the series gated structure.



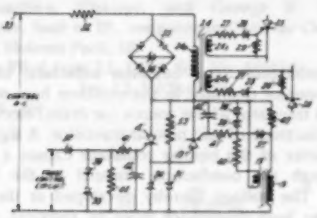
The gate of another level selects one current path of said selected pair in said one level and thereby selects one of said inputs. A single current source supplies the current for the one-out-of-eight selected current path.

3,639,782

MAGNETIC SLAVE GATING CIRCUIT FOR FULL WAVE PHASE-CONTROLLED THYRISTOR CIRCUITS

Harold W. Lord, Mill Valley, Calif., assignor to General Electric Company

Filed June 1, 1970, Ser. No. 42,391
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 T **3 Claims**



A relatively simple magnetic gating circuit for phase-controlled inverse-parallel thyristors has a small error between control and slaved gating pulses. A nonlinear inductor is reset in the phase delay angle before the master SCR conducts and saturates at the same angle in the opposite half cycle to supply gating current to the slave SCR. For a reactive load, this basic circuit provides clipped alternating current gating signals to a saturable gate transformer which selectively supplies gate current to a pair of inverse-parallel high-power thyristors connected for example to a power transformer. A magnetic phase control circuit is shown for the low-power master thyristor. An application is a single phase or polyphase heater control.

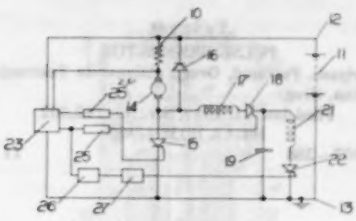
3,639,783

THYRISTOR CIRCUITS

Michael Ainley Thompson, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Dec. 10, 1969, Ser. No. 884,010
Claims priority, application Great Britain, Dec. 23, 1968, 60,990/68
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 M **1 Claim**

A known thyristor circuit has a first thyristor connected in series with a load between a pair of DC terminals. Connected across the first thyristor is a second thyristor and a capacitor in series, and there is a further circuit connected across the capacitor including a third thyristor. The capacitor charges when the second thyristor conducts, the capacitor voltage is reversed when the third thyristor conducts and the first thyristor is turned off by the capacitor when the second



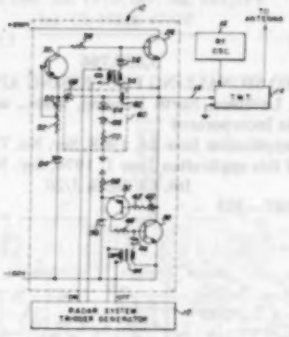
thyristor conducts again. In such a circuit, the invention consists in providing a timing circuit for firing the third thyristor at a predetermined fixed time after the second thyristor is fired, this period being chosen to be sufficient to allow the second thyristor to charge the capacitor.

3,639,784

PULSE GENERATOR WITH STORAGE MEANS TO MAINTAIN OUTPUT TRANSISTOR IN SATURATION AFTER REMOVAL OF TRIGGER PULSE

John J. Kelleher, Jr., Tewksbury, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Jan. 4, 1971, Ser. No. 103,400
Int. Cl. H03k *5/00*
U.S. Cl. 307—260 **4 Claims**



A high-voltage pulse generator responsive to pairs of "on"-"off" trigger signals wherein a first or second voltage supply is selectively coupled to an output terminal during the time interval between such pairs of trigger signals. The "off" trigger signal drives a first output transistor into saturation to thereby couple the first voltage supply to the output terminal. Such output transistor is maintained in saturation after removal of the "off" trigger signal by a low-voltage base drive transistor. During the time the first voltage supply is coupled to the output terminal a capacitor coupled to such terminal becomes charged with low-voltage potential energy, such voltage being limited by a zener diode. When the "on" trigger signal drives a second output transistor into saturation the first voltage supply is decoupled from the output terminal and the second voltage supply becomes coupled thereto. The second output transistor is maintained saturation after removal of the "on" trigger signal by a second low-voltage base drive transistor, such base drive transistor being sup-

plied voltage by the voltage previously stored in the capacitor. When an "off" trigger signal is applied to the first output transistor, the voltage developed between the emitter-collector electrodes of the second low-voltage base drive transistor is limited to a low voltage by the zener diode.

3,639,785

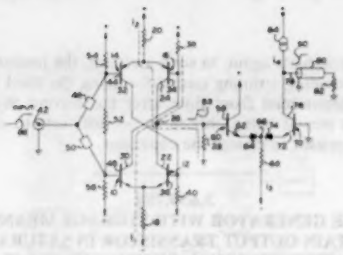
PULSE GENERATOR

Hiro Moriyasu, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jan. 21, 1969, Ser. No. 792,502

Int. Cl. H03k *17/60*

U.S. Cl. 307—288 **11 Claims**



A pulse generator includes first and second pairs of transistors forming current switches wherein each pair receives current at a common emitter connection. A load is connected to the collector terminals of the second transistor of each pair, while the collector of the first transistor of each pair drives the base of the second transistor in the opposite pair.

3,639,786

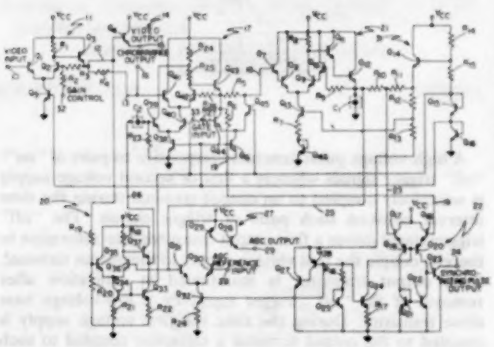
VIDEO SIGNALLING PROCESSING APPARATUS

Ralph E. Lovelace, North Reading, Mass., assignor to GTE Sylvania Incorporated

Original application June 24, 1968, Ser. No. 739,323. Divided and this application June 1, 1970, Ser. No. 54,067

Int. Cl. H03k *5/20*

U.S. Cl. 307—303 **2 Claims**



Video signal processing apparatus which amplifies the composite video signal from the video detector of a television receiver and charges a capacitance to the peak voltage of the synchronizing pulses. The composite video signal is compared with the voltage stored in the capacitance by a comparator and an output pulse is produced when the voltage of the composite video signal is high enough to indicate the presence of a synchronizing pulse. The composite video signal is also compared with the stored voltage by a second comparator, and a noise-cancelling signal which prevents noise from affecting the voltage stored on the capacitance or the first comparator is generated when the voltage of the composite video signal is high enough to indicate the presence of noise.

3,639,787

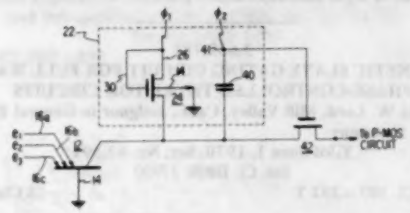
INTEGRATED BUFFER CIRCUITS FOR COUPLING LOW-OUTPUT IMPEDANCE DRIVER TO HIGH-INPUT IMPEDANCE LOAD

Harry Charles Lee, West Lafayette, Ind., assignor to RCA Corporation

Filed Sept. 15, 1969, Ser. No. 858,073

Int. Cl. H01l *19/00*

U.S. Cl. 307—303 **8 Claims**



The combination in a common substrate, of a lateral bipolar transistor operated in the common base mode and a field-effect transistor whose source (or drain) electrode is the collector electrode of said bipolar transistor. A signal applied to the emitter of the bipolar transistor causes a current to flow through the conduction channel of the field-effect transistor. The voltage thereby developed at the electrode common to both transistors, even in response to a small signal current, is of sufficient amplitude to drive a high-input impedance load such as other field-effect transistors embedded in the same substrate.

3,639,788

HIGH-IMPEDANCE POWER FOR ENGINE IGNITION AND EXHAUST-SYSTEM PARTICULATE REMOVAL

John J. Horan, Willow Grove, Pa.

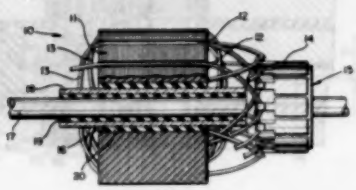
Filed Mar. 11, 1970, Ser. No. 18,419

Int. Cl. H01v *7/00*

U.S. Cl. 310—8.1 **64 Claims**

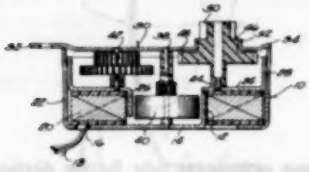
This invention discloses unitary assemblies employing novel means for generation, via ferroelectrics, of timed engine-ignition impulses and of high-impedance impulses for removing particulate pollutants entrained in exhaust gases.

3,639,789
INSULATED ARMATURE CONSTRUCTION AND METHOD
Thaddeus E. Bednarski, Timonium, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.
Filed Nov. 21, 1969, Ser. No. 878,825
Int. Cl. H02k 1/04
U.S. Cl. 310—43 8 Claims



An armature including a sleeve of insulating material bonded in place between the armature shaft and the armature laminations. The insulating sleeve may extend under the commutator if desired. A method of providing this armature is also described which comprises holding the laminations, the sleeve and the shaft in their relative positions and injecting a bonding material between the sleeve and the shaft and between the sleeve and the laminations.

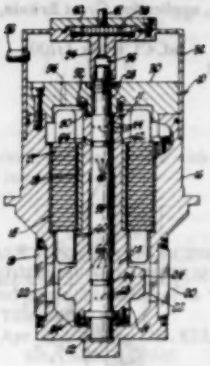
3,639,790
MOTOR CASE
Kenji Yatsushiro, Chicago, and George F. Kuchuris, Westchester, both of Ill., assignors to Controls Company of America, Melrose Park, Ill.
Filed June 22, 1970, Ser. No. 48,414
Int. Cl. H02k 5/00
U.S. Cl. 310—89 1 Claim



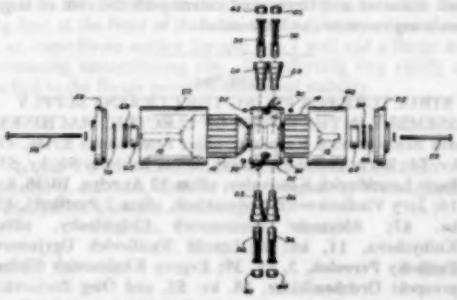
The motor case has a cylindrical sidewall which receives and centers the dividerlike gearcase pressed into the motor case. The cover is centered by and seats on the motor case which is staked to retain the cover without transfer of staking pressures to the gearcase. Since the motor case centers the gear case and the cover, concentricity is readily attained and shafts journaled in the parts are assured alignment.

3,639,791
HYDROSTATIC AIR BEARING
Keith R. Jenkin, Warren, Mich., assignor to Speedring Corporation, Warren, Mich.
Filed Feb. 13, 1970, Ser. No. 11,106
Int. Cl. H02k 5/16; F16c 17/04
U.S. Cl. 310—90 14 Claims

A laser scanner employing a reflective polyhedron which is rotatably supported relative to a stator shaft by means of a hydrostatic air bearing. The bearing is constructed to provide at least two axially spaced sets of high-pressure ports and exhaust passages on opposite sides of the ports and including an exhaust passage centrally between the sets of ports so as to effectively decouple the high-pressure regions in the vicinity of the ports and effectively divide the bearing into two portions each of which attains optimum compliance by having an effective length-to-diameter ratio of one.



3,639,792
MOTOR-GENERATOR
Robert F. Anderson, St. Louis Park, Minn., assignor to Electro-Craft Corporation, Hopkins, Minn.
Filed Dec. 28, 1970, Ser. No. 101,759
Int. Cl. H02k 47/20
U.S. Cl. 310—113 8 Claims



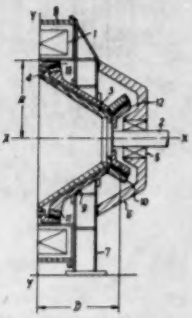
The armatures and commutators of a DC motor and a DC generator are mounted coaxially on a common shaft with the two commutators being positioned adjacent to each other between the two armatures. The commutators are enclosed by a nonmagnetic housing containing brushes for making electrical contact therewith. Each of the armatures are enclosed by a corresponding housing containing field magnets therefor. The brushes are mounted in a fixed position on the nonmagnetic housing, and the housings containing field magnets are rotatably attached to opposite ends of the housing containing the brushes so that the field magnets can be aligned relative to their respective brushes for commutation along a neutral axis and for minimizing electromagnetic interaction between the motor and the generator.

3,639,793

SUPERCONDUCTING HOMOPOLAR DYNAMOELECTRIC MACHINES

Anthony Derek Appleton; Michael Burke Wood, and Brian Edward Mulhall, all of Fossway, Newcastle upon Tyne 6, England

Filed June 1, 1970, Ser. No. 42,040
Claims priority, application Great Britain, June 2, 1969, 27,863/69
Int. Cl. H02k 31/00
U.S. Cl. 310—178 12 Claims



A homopolar machine having a superconducting annular field coil within which is mounted a rotor having a conductor assembly consisting of a single frustoconical conductor or a group of conductors in a frustoconical array, the outer end of the conductor assembly being located in the region of high field strength immediately within the field coil and the inner end of the conductor assembly being thus displaced axially away from the center of the coil into a region of low field strength whereby the provision of current transfer surfaces of small diameter and large axial extent with the risk of large circulating currents can be avoided.

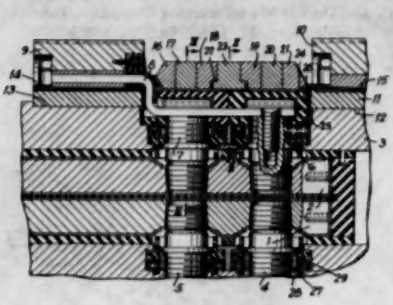
3,639,794

STRUCTURE FOR FIXING THE CURRENT SUPPLY ASSEMBLY IN THE ROTOR OF ELECTRIC MACHINES

David Bentsionovich Karpman, ulitsa Frantishka Krala, 49, kv. 54; Boris Volkovich Spivak, ulitsa Kosiora, 56, kv. 55; Boris Leonidovich Konovalov, ulitsa 12 Aprelya, 10/46, kv. 16; Jury Vladimirovich Bednarchuk, ulitsa 2 Pyatiletki, 42, kv. 61; Alexandr Abramovich Chigirinsky, ulitsa Kuibysheva, 11, kv. 8; Leonid Vasilievich Ugrjumov, Faninsky Pereulok, 3, kv. 39; Evgeny Khaimovich Glider, prospekt Ordzhonikidze, 18, kv. 55, and Oleg Borisovich Gradov, ulitsa Kosiora, 6, kv. 1, all of Kharkov, U.S.S.R.

Continuation of application Ser. No. 751,567, Aug. 9, 1968, now abandoned. This application Apr. 27, 1970, Ser. No. 29,755
Int. Cl. H02k 13/00
U.S. Cl. 310—231 9 Claims

A structure for fixing the current-supply assembly in the rotor of an electric machine, such as a turbogenerator and for insuring high reliability of the current supply assembly. The device insures high mechanical strength of the supply assembly as well as satisfactory electric contact. The current-supply assembly comprises a rotor shaft whose central hole accommodates current-conducting bars; a bushing fitted on the rotor shaft and sliprings fitted on the bushing and electrically insulated therefrom; current-conducting screws making electrical connection between buses coupled to the sliprings and the current-conducting bars, said current-conducting screws and buses being also insulated from the rotor shaft and the bushing to which they are fixed with the help of keys



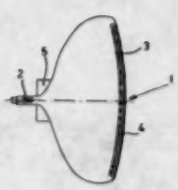
disposed in the axial and transverse slots provided in the bushing.

3,639,795

COLOR CATHODE-RAY TUBE WITH PLURAL CATHODES AND THREE COMMON GRIDS EACH HAVING SAME PLURALITY OF BEAM-DEFINING APERTURES

Piet Gerard Joseph Barten, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 743,765, July 10, 1968, Continuation-in-part of application Ser. No. 745,551, July 17, 1968. This application Aug. 24, 1970, Ser. No. 66,375
Int. Cl. H01j 29/50, 29/00
U.S. Cl. 313—70 C 6 Claims



A single gun cathode-ray tube for the display of color television images including a separate cathode for each electron beam and common first, second, third and fourth grids, each having apertures for each beam. The distance between successive centers of the apertures in the third grid is less than 7 mms. and the dimension of the third grid at the apertures in the direction of the axis of the gun is not more than 4 mms.

3,639,796

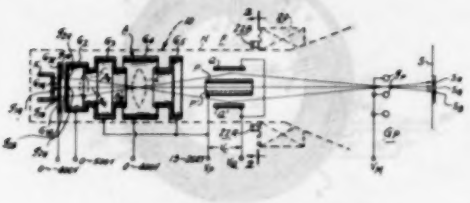
COLOR CONVERGENCE SYSTEM HAVING ELONGATED MAGNETS PERPENDICULAR TO PLANE OF PLURAL BEAMS

Yuzo Fuse, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 7, 1969, Ser. No. 805,340
Claims priority, application Japan, Mar. 11, 1968, 44/15348; 44/15349
Int. Cl. H01j 29/72, 31/20
U.S. Cl. 313—77 3 Claims

In a color picture tube, particularly of the single-gun, plural-beam-type, in which a central beam and two side beams lying in a common plane are focused on the color phosphor

screen, the side beams are angled with respect to the central beam to converge with the latter at a common point on the beam-selecting grid or mask, and the beams are simultaneously deflected to scan the screen; misconvergence of the beams is corrected by permanent or electromagnets arranged at opposite sides of the central beam and producing respec-



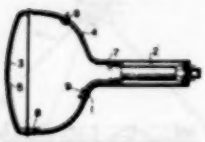
tive magnetic fields having lines of magnetic flux extending generally perpendicular to the common plane of the beams and in opposed directions, and the effects of such magnetic fields on the adjacent side beams and on the central beam are varied either by independent displacement of the magnets toward and away from the central beam or by controlling the strengths of the fields.

3,639,797

CATHODE-RAY TUBE HAVING A PLATED INNER METAL LAYER OF HIGH-TENSILE STRENGTH

Masakazu Fukushima, Hachioji-shi, and Katuhiro Kimura, Tokyo, both of Japan, assignors to Hitachi, Ltd., Tokyo-to, Japan

Filed Sept. 30, 1968, Ser. No. 763,796
Claims priority, application Japan, Oct. 23, 1967, 42/67854
Int. Cl. H01j *19/40, 29/02*
U.S. Cl. 313—82 **6 Claims**



A cathode-ray tube in which the conductive thin film on the inner surface of the glass tube is formed of a high-tensile strength metallic-plating layer.

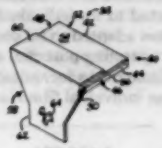
3,639,798

SHADOW MASK SUPPORT COMPRISING FLAT, BIMETALLIC ELEMENT ATTACHED TO INWARDLY PROJECTING FRAME FLANGE

Larry R. Miller, Waynesboro, Pa., assignor to Sylvania Electric Products Inc.

Filed Aug. 5, 1970, Ser. No. 61,163
Int. Cl. H01j *29/06, 31/20, 19/52*
U.S. Cl. 313—85 S **5 Claims**

Parallax barrier supporting means comprising substantially flat, rectangular bimetallic elements are disclosed. The elements are attached to the upper portion of the barrier frame and have depending springs attached thereto. The springs



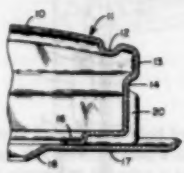
have apertures formed therein to mate with studs formed on the tube envelope inner wall.

3,639,799

SHADOW MASK WITH REINFORCING RING FOR COLORED TELEVISION PICTURE TUBE

Myron C. Kirchner, Itasca, Ill., assignor to Tubal Industries, Inc., Elk Grove Village, Ill.

Filed Apr. 2, 1969, Ser. No. 822,792
Int. Cl. H01j *29/46*
U.S. Cl. 313—85 **10 Claims**



A shadow mask for color TV picture tubes contains the conventional foraminous or translucent area formed by a multiple of miniature apertures in a curved portion of a thin metal sheet through which the electron beams pass in traveling from the electron guns at the rear of the tube to the viewing face at the front of the tube. Around the translucent area is an imperforate section formed into a wall and a flange and containing strengthening ribs. A reinforcing ring rigidly attached to the flange provides additional stability.

3,639,800

LAMP TO ELIMINATE SINGLE FRAME CURTAIN

Nicholas J. Rainone, Clifton, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 15, 1970, Ser. No. 3,078
Int. Cl. H01k *1/30*
U.S. Cl. 313—113 **3 Claims**

A projection lamp for use in a motion picture projection system. The lamp comprises a primary incandescible filament one end of which is electrically connected to a lamp lead-in, a first ballast filament one end of which is electrically con-

nected to a lamp lead-in, with the other ends of these filaments being electrically connected. The improvement comprises disposing within the lamp a second ballast filament one end of which is serially electrically connected to the primary incandescible filament and the first ballast filament, and the other end is connected to an individual lead-in. The second ballast filament is thus adapted to be connected as part of the series load with the operating potential applied thereacross to cause the primary filament to incandesce with a low level of intensity to permit an individual film frame to be viewed.

3,639,801

HIGH-PRESSURE MERCURY VAPOR IODIDE DISCHARGE LAMP

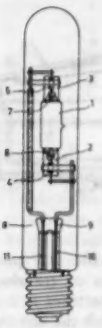
Cornelis Adrianus Joannes Jacobs; Louis Benjamin Beijer, and Antonuis Jozephus Gerardus Cornelis Driessen, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 24, 1970, Ser. No. 49,279

Claims priority, application Netherlands, June 27, 1969, 6909891

Int. Cl. H01j *17/20, 61/12*

U.S. Cl. 313—223 **4 Claims**



A high-pressure mercury vapor iodide discharge lamp comprising an envelope forming a discharge space having a wall loading between 10 and 100 watts per sq. cm during operation of the lamp. The discharge space contains a gaseous filling comprising a rage gas, a quantity of mercury between 0.5 to 40 mg. per cubic cm. of the content of the discharge space, a quantity of iodine, a quantity of sodium and lithium to form sodium iodide lithium iodide, such that unevaporated lithium iodide and sodium iodide are present during operation of the lamp, a quantity of thallium between 0 to 15 percent by weight of the quantity of mercury, and a quantity of titanium between 0.01 and 5 percent by weight of the quantity of mercury. The quantity of iodine is limited to not more than twice the minimum amount required to bind the lithium, sodium, thallium and titanium to their respective iodides.

3,639,802

MICROWAVE SIGNAL DELAY APPARATUS

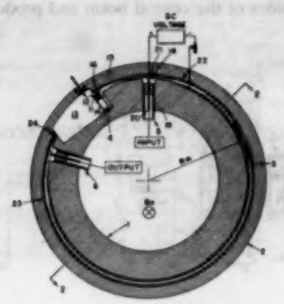
Erwin F. Belohoubek, Kendall Park, N.J., assignor to The United States of America as represented by the Secretary of the Navy

Filed Aug. 12, 1966, Ser. No. 572,153

Int. Cl. H01j *25/34*

U.S. Cl. 315—3.5 **6 Claims**

There is disclosed a microwave signal delay device employing an M-type traveling wave tube. The drift space of this tube is of circular shape with a mean radius of R_m, and the drift electrodes are similarly curved with a radius of curvature equal to $R_m/2$. With this relationship, all of the electrons of the beam have substantially the same angular velocity and travel around the drift space in equal times. This minimizes any velocity slip in the beam.



3,639,803

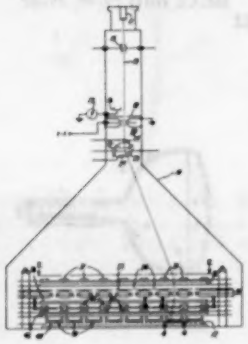
CASCADED ELECTRON OPTICAL SYSTEM

Sterling P. Newberry, Schenectady, N.Y., assignor to General Electric Company

Original application Jan. 3, 1969, Ser. No. 788,770, now Patent No. 3,534,219, dated Oct. 13, 1970. Divided and this application Feb. 16, 1970, Ser. No. 14,850

Int. Cl. H01j *29/41*

U.S. Cl. 315—12 **8 Claims**



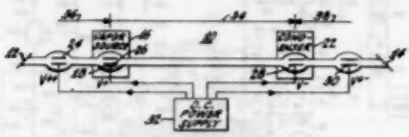
Precise control of an electron beam impinging on a large area receiving surface is achieved by employing, between the electron source and the receiving surface, a first matrix of electron deflection apparatus and by employing, intermediate the receiving surface and the first matrix, but close to the receiving surface, a second matrix of electron deflection apparatus of sufficient size to cover substantially all of the receiving surface. A predetermined one of the first matrix of lenses serves to direct the electron beam onto a predetermined one of the second matrix of lenses which provides fine control of the beam as it is swept over the underlying portion of the receiving surface.

3,639,804

ION DISCHARGE TUBE EMPLOYING CATAPHORETIC TECHNIQUES

Karl G. Hernqvist, Princeton, N.J., assignor to RCA Corporation

Filed Apr. 4, 1969, Ser. No. 813,485
Int. Cl. H01j 17/22
U.S. Cl. 315—108 12 Claims



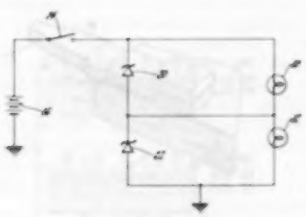
Disclosed are several embodiments of a metal vapor laser having a window at each end in which cataphoretic means are employed for both propagating the metal vapor between a vapor source and a condenser and for preventing condensation of the metal vapor on one or both of the windows. The cataphoretic means may include two or more spaced electrodes which are strategically placed along the length of the laser and which have applied thereto respective DC potentials of the proper polarity and value. Alternatively, the condenser may be omitted and a combination of both rectified and unrectified RF voltage of the proper values may be applied to the respective spaced electrodes of the metal vapor laser.

3,639,805

SERIES LAMP SAFEGUARD CIRCUIT

Nils L. Muench, Bloomfield Hills, and Charles B. Murphy, Fraser, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 25, 1970, Ser. No. 40,184
Int. Cl. H05b 37/00
U.S. Cl. 315—122 4 Claims



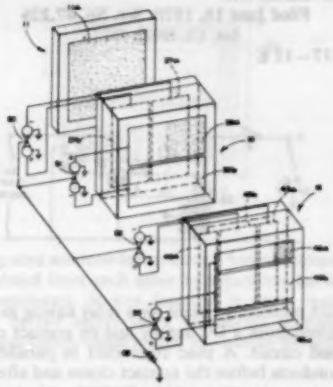
A vehicle-headlamp-energizing circuit for headlamps connected in series. Each headlamp has a breakdown diode connected in parallel, and each breakdown diode has a breakdown voltage slightly larger than the normal potential drop across its parallel connected lamp so as to conduct current around the lamp when it fails and maintain conduction through the remaining lamps.

3,639,806

DIGITALLY ADDRESSED ELECTROLUMINESCENT SOLID STATE DISPLAY DEVICE COMPRISING MODULATING PLATE FOR INTENSITY MODULATING A SCANNING LIGHT BEAM

Stanley C. Requa, Northridge, Calif., assignor to Northrop Corporation, Beverly Hills, Calif.

Filed Nov. 28, 1969, Ser. No. 880,855
Int. Cl. H01j 31/50; H05j 37/00; G02b 5/16
U.S. Cl. 315—169 10 Claims



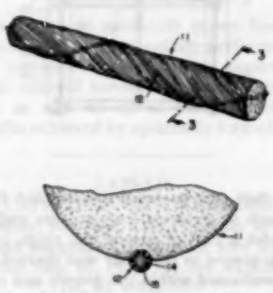
A uniform screen of light is provided by a planar member. Sandwiched between this member and a display surface are a plurality of control plates for forming a scanning light beam in response to digital control signals. Each control plate has a layer of photoconductive material and a layer of electroluminescent material deposited thereon. Also deposited on each of the control plates are electrodes arranged in predetermined finger patterns. The electrodes are biased in response to digital control signals to cause the beam to pass through the control plates to a single portion of the display surface at a time.

3,639,807

LOW-STATIC CARPET

Thomas B. McCune, Mahopac, N.Y., assignor to Hudson Wire Company, Ossining, N.Y.

Filed June 10, 1970, Ser. No. 44,911
Int. Cl. A01d 43/00; H05f 3/00
U.S. Cl. 317—2 C 12 Claims



A very fine strand of thinly insulated electrically conductive wire is introduced into a strand of nonconductive yarn

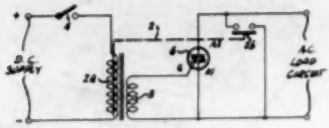
composed of natural and/or synthetic fibers to form a conductive composite strand. Such conductive strands of yarn are then woven or tufted with conventional nonconductive strands into a carpet, thereby substantially reducing static electricity effects and, at the same time, protecting persons on the carpet from the danger of severe shock due to a household voltage source being exposed to the carpet.

3,639,808

RELAY CONTACT PROTECTING CIRCUITS

Gerald R. Ritzow, Racine, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed June 18, 1970, Ser. No. 47,226
Int. Cl. H02h *7/22*
U.S. Cl. 317—11 E **7 Claims**



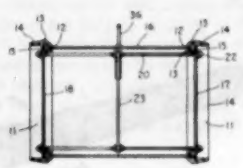
A contact protecting circuit for a relay having its operating coil energized from a DC supply and its contact controlling an AC load circuit. A triac connected in parallel with the contact conducts before the contact closes and after the contact opens to protect the contact from electrical arcing. In a first version, the triac is controlled by a secondary winding magnetically coupled to the relay coil. In a second version, the triac is controlled by a transformer connected in parallel with the relay coil. In this manner, the triac is gated only for a short time interval when triac conduction is needed and the triac will not continue to conduct in the event the relay contact fails to close.

3,639,809

UNIVERSAL ENVIRONMENT PACKAGE WITH SECTIONAL COMPONENT HOUSING

Graydon A. Phlieger, Jr., Cocoa, Fla., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Dec. 16, 1970, Ser. No. 98,773
Int. Cl. H05k *5/06*; **B65d** *7/06*
U.S. Cl. 317—117 **5 Claims**



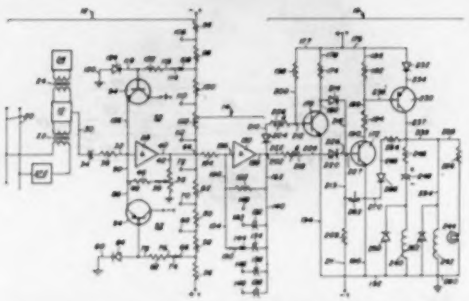
A housing that can be readily assembled for packaging equipment, such as electrical components and meters. The housing includes a pair of spaced end rings, each of which has an endless groove in the inner wall thereof. A thin elongate shell is positioned within the groove and end plates are carried adjacent ridges on the opposite side of the end rings. Bolts extend through the panels for drawing the panels flush against ridges carried on the end ring and supporting panel boards within the housing. Thus, an airtight package or housing can be readily assembled.

3,639,810

POWER SYSTEM MONITORING RELAY

Ferber R. Schleif, Denver, Colo., assignor to The United States of America as represented by the Secretary of the Interior

Filed Feb. 18, 1971, Ser. No. 116,318
Int. Cl. G08b *21/00*
U.S. Cl. 317—147 **6 Claims**



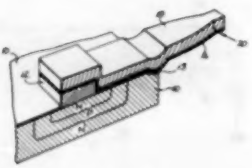
An electrical power system subsidiary relay for controlling system normalizing and operation recording mechanisms which in response to detection by the relay of system frequency deviation from standard operating frequency derives in a differentiator-amplifier circuit component thereof an acceleration of deceleration signal predictive of system disturbance conditions. Adjustable devices in circuits interconnected with the differentiator-amplifier circuitry are settable to predetermine the sensitivity, or magnitude for response, and the minimal response and pickup timing for the relay.

3,639,811

SEMICONDUCTOR WITH BONDED ELECTRICAL CONTACT

Jon M. Schroeder, Los Altos, Calif., assignor to Fairchild Camera and Instrument Corporation, Syosset, L.I., N.Y.

Original application Nov. 13, 1967, Ser. No. 682,193. Divided and this application Nov. 19, 1970, Ser. No. 71,363
Int. Cl. H01l *5/02*
U.S. Cl. 317—234 **4 Claims**



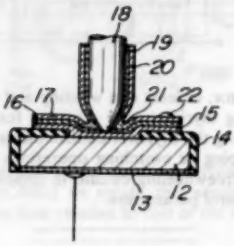
A method is disclosed for batch forming extended beam leads to the pads or contact areas of a solid state device (e.g., monolithic integrated circuit hybrid integrated circuit, discrete device) whereby external connections to the device may be made. The process involves depositing a metal or a plurality of metals over the device in a predetermined manner with the metal adhering to the device contact area but only weakly, if at all, adhering to the remainder of the surface. The device is separated by backside scribing which leaves the beams extending from the contact area of each device.

3,639,812

MECHANOELECTRICAL TRANSDUCER HAVING A PRESSURE APPLYING PIN FIXED BY METALLIC ADHESION

Yasuo Iijima, Kobe, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan

Filed Dec. 2, 1969, Ser. No. 881,383
Claims priority, application Japan, Dec. 4, 1968, 43/89780
Int. Cl. H01l 3/00, 5/00
U.S. Cl. 317—234 R 5 Claims



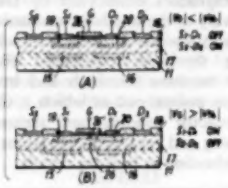
In a transducer utilizing the pressure-sensitive property of a semiconductor, a pin for applying pressure is adhered onto a pressure-sensitive portion of the semiconductor by the metallization of the surface of the pin and the semiconductor body. Using this means, the pressure application pin is prevented from moving except in contact with a small portion, thereby enhancing the lifetime and stability of the device.

3,639,813

COMPLEMENTARY ENHANCEMENT AND DEPLETION MOSFETS WITH COMMON GATE AND CHANNEL REGION, THE DEPLETION MOSFET ALSO BEING A JFET

Mototaka Kamoshida, and Sho Nakanuma, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Apr. 14, 1970, Ser. No. 28,325
Claims priority, application Japan, Apr. 15, 1969, 44/30130
Int. Cl. H01l 13/00, 19/00, 5/06, 11/14
U.S. Cl. 317—235 R 6 Claims



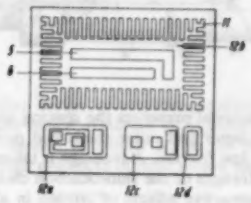
A semiconductor device comprising a pair of FET's having a common electrode has operating characteristics similar to paired complementary FET's. In one embodiment of the invention the device functions as paired IGFET's, having a common gate electrode, and in a second embodiment the device functions to couple an IGFET to a JGFET.

3,639,814

INTEGRATED SEMICONDUCTOR CIRCUIT HAVING INCREASED BARRIER LAYER CAPACITANCE

Reiner Engbert, Talheim, Germany, assignor to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm (Danube), Germany

Filed May 20, 1968, Ser. No. 730,284
Claims priority, application Germany, May 24, 1967, T 33,927
Int. Cl. H01l 19/00
U.S. Cl. 317—235 R 4 Claims



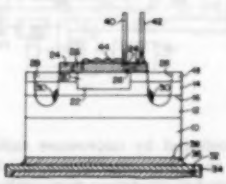
An integrated semiconductor circuit having semiconductor regions isolated from each other by separation barrier layers and semiconductor devices inserted in these regions, the separation barrier layers being configured to have an increased capacitance which is used to stabilize the supply voltage.

3,639,815

EPI BASE HIGH-SPEED POWER TRANSISTOR

Frederick G. Ernick, Latrobe; Paul M. Kisinko, Greensburg; Joseph Marino, Irwin, all of Pa., and Peter J. Kannam, Princeton, N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 694,552, Dec. 29, 1967, now abandoned. This application Sept. 30, 1969, Ser. No. 862,280
Int. Cl. H01l 11/06
U.S. Cl. 317—235 R 7 Claims



A transistor having an epitaxially grown base region has the good secondary breakdown voltage performance of a single diffused transistor having a base region comprising suitably doped material having a uniform level of impurity concentration as well as all of the desirable frequency response benefits achieved by epitaxially formed transistors.

3,639,816

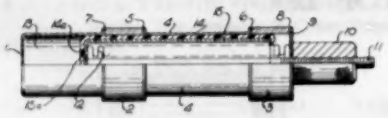
VACUUM CAPACITOR WITH SOLID DIELECTRIC

Wesley N. Lindsay, San Jose, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 10, 1970, Ser. No. 62,324
Int. Cl. H01g 5/04
U.S. Cl. 317—245 10 Claims

A unique combination of vacuum component techniques to a solid dielectric capacitor. The vacuum-type enclosure includes at least one generally cylindrical body shell member of

insulating material and one or more metallic cylindrical sections attached thereto. A control shaft operating through a vacuum-type bellows moves an internal cylindrical member encased in an insulating material sleeve of polytetrafluoroethylene to provide variable capacitive engagement within at least one of the outer metallic shell members. The bearing arrangements common in vacuum variable capacitors are eliminated, because the fluorocarbon insulating dielectric material preserves the spacing and coaxial relationship of the inner and outer shells and provides a sliding surface of very low friction. Advantage is taken of the desirable dielectric strength of the fluorocarbon dielectric material without the destructive effects of corona in air. An alternative planar element embodiment of the invention using disc plates and a spring disc variable plate is also shown. In that embodiment the dielectric is also a planar element.



3,639,817

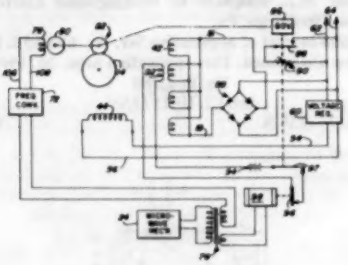
MAGNETIC ACCELERATOR

Gregory Grosbard, 353 West 19th Street, New York, N.Y.

Continuation-in-part of application Ser. No. 558,465, June 17, 1966, now Patent No. 3,480,811. This application Oct. 20, 1969, Ser. No. 867,602

Int. Cl. B64g *1/00*

U.S. Cl. 318—16 **14 Claims**



Energy is transferred by microwave radiation over long distances to an energy storage device in which the radiant energy is converted to electromagnetic pulses accelerating a rotor to increase its energy level. The kinetic energy level of the rotor, which is determined by its rotational speed, is sustained by radially directed, electromagnetically induced forces. Energy is withdrawn through coils toroidally surrounding the rotor within which current is generated by rotation of the rotor.

3,639,818

ELECTRONIC SWITCHING FOR THE WINDINGS OF ELECTRICAL MACHINERY

Albert Wiart, Sannois, Val d'Oise, France, assignor to Societe Anonyme dite: Jeumont-Schneider, Paris, France

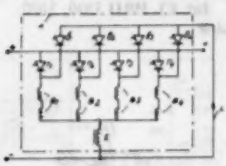
Filed Oct. 24, 1969, Ser. No. 869,289

Claims priority, application France, Oct. 25, 1968, 171311; June 10, 1969, 6919048; Oct. 9, 1969, 6934509

Int. Cl. H02k *29/00*

U.S. Cl. 318—138 **13 Claims**

A system for switching and chopping DC current flowing through the windings of an electric machine, characterized in that the system comprises: a smoothing reactor common to the various windings; supply thyristors interposed between the winding ends and one of the poles of the power supply; freewheeling thyristors connected, like the first-mentioned thyristors, to the winding ends and to a common connection of a freewheeling circuit made by way inter alia of the smoothing reactor, at least one winding and the corresponding freewheeling thyristor; and a system for controlling the switch and driving the thyristor control electrodes so as to initiate the chopping or switching operations, with the intervention of the freewheeling circuit, in dependence upon the value of the control parameters.



3,639,819

SWITCHER-CHOPPER FOR CONTROLLING CURRENT IN BRUSHLESS ROTATING MACHINES, SUPPLIED BY A DC SOURCE

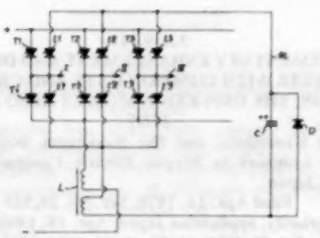
Albert C. Wiart, Sannois, France, assignor to Jeumont-Schneider, Paris, France

Filed Nov. 28, 1969, Ser. No. 880,650

Claims priority, application France, Nov. 27, 1968, 175549

Int. Cl. H02k *29/00*

U.S. Cl. 318—138 **11 Claims**



A system for switching, reversing and varying the current flowing through the windings of a DC energized electrical machine, comprising: a two-winding smoothing reactor; two sets of supply thyristors connected by their anodes and cathode respectively to the machine terminals and to the two sides of a DC supply via one of the reactor windings; two sets of freewheeling thyristors connected like the supply thyristors to the machine terminals and interconnected to form two common points, one of which is taken to one end of the second reactor winding; and means for triggering chopping, switching and reversing operations with the use of at least one freewheeling or braking circuit.

3,639,820

CONVERTER ARRANGEMENT FOR FEEDING VARIABLE AC MOTOR

Herbert Stemmler, Nussbaumen, Switzerland, assignor to Aktiengesellschaft Brown, Boveri Cie, Baden, Switzerland

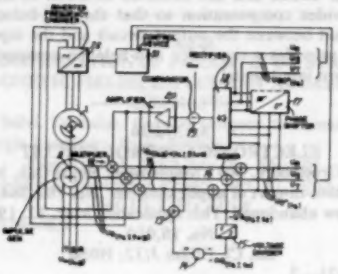
Filed Mar. 25, 1970, Ser. No. 22,530

Int. Cl. H02p *5/24*

U.S. Cl. 318—147 **9 Claims**

A regulable and controllable inverter or converter for feeding alternating current motors with a regulated current

and frequency in which adjustment of the converter output voltage per phase is effected by the voltage output of a slip



ring armature-asynchronous machine driven by the motor, means being provided to rotate the winding axis of the asynchronous machine relative to that of the motor.

3,639,821

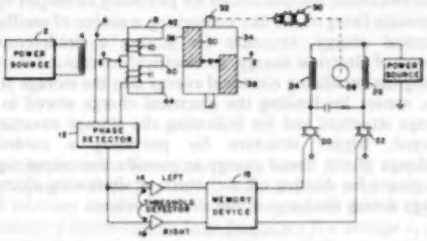
ELECTROMAGNETIC MOTOR REVERSING CONTROL

Charles A. Byers, Lenixa, Kans., and Robert A. Becker, Cedar Rapids, Iowa, assignors to Collins Radio Company, Cedar Rapids, Iowa

Filed Sept. 28, 1970, Ser. No. 76,184

Int. Cl. H02p *3/10*

U.S. Cl. 318—282 **5 Claims**



A motor control means for cyclically reversing an electric motor. The motor control includes an electromagnetic switch comprising a transformer having an E-shaped core and a center-tapped secondary winding, together with a pair of magnetic pole pieces carried by a rotatable shaft mounted in proximity with the transformer and driven by the motor to alternately cause the respective pole pieces to differentially influence the current flow through respective halves of the secondary winding and thereby produce a signal to effect reversal of the motor.

3,639,822

SOLID STATE POWER CONTROLLER FOR DC PERMANENT MAGNET AND SHUNT FIELD WINDING MOTORS SUPPLIED FROM AN AC SOURCE

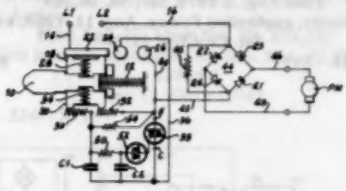
Harry W. Brown; Walter L. Rutchik, and Lawrence J. Ryczek, all of Milwaukee, Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed May 11, 1970, Ser. No. 36,124

Int. Cl. H02p *5/36, 7/58*

U.S. Cl. 318—345 **1 Claim**

A solid state switching circuit and power controller for permanent magnet and shunt field winding motors used in portable power tools and the like. The power controller employs a bidirectional thyristor triode and trigger diode for varying the current supplied to the motor armature, and a



full-wave rectifier bridge to establish unidirectional current flow through the motor armature on opposite half cycles of the AC power supply. A resistor across the AC terminals of the rectifier bridge enhances control action under light loads.

3,639,823

FINE AND COARSE POSITION CONTROL DEVICE

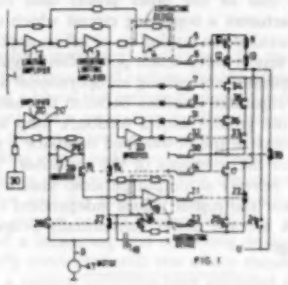
Alexandre Leglise, Montignies-le-Tilleul, Belgium, assignor to Acec Ateliers De Constructions Electriques De Charleroi, Charleroi, Belgium

Filed Nov. 19, 1969, Ser. No. 878,131

Claims priority, application Belgium, Nov. 18, 1968, PV66.321

Int. Cl. G05b *11/18*

U.S. Cl. 318—595 **9 Claims**



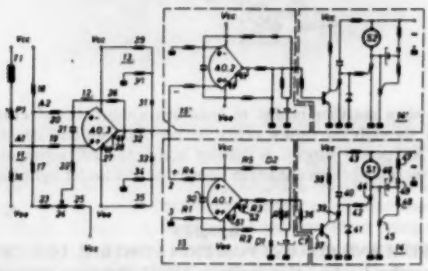
A device for governing the speed of a mobile member comprising: fixed indexing means located on the path of said mobile member; means located on said mobile member for detecting said indexing means; a variable speed motor located on the mobile member and operating a device for driving said mobile member, said motor being connected to a fixed portion of said position control device by means of flexible cables; a coarse measuring device responsive to said detecting means and including a coarse error voltage generator for generating a voltage proportional to the difference between a predetermined final position of said mobile member and the position actually occupied by said mobile member measured in coarse units, said coarse measuring device providing a constant speed control voltage to said motor; a fine measuring device coupled to the motor driving said mobile member and providing a decreasing speed control voltage for said motor; a commutator for replacing said constant speed control voltage applied to said motor by said decreasing speed control voltage; and means responsive to said coarse measuring device for detecting that said mobile member is approaching its final position and for operating said commutator.

3,639,824

POWER FEED REGULATOR SYSTEM FOR TEMPERATURE REGULATION AND THE LIKE

Claude Malavasi, 12, Avenue d'Alsace-Lorraine 74, Annemasse, France

Filed Aug. 3, 1970, Ser. No. 60,569
Claims priority, application France, Aug. 11, 1969, 6927489
Int. Cl. G05d 23/24
U.S. Cl. 318—599 8 Claims



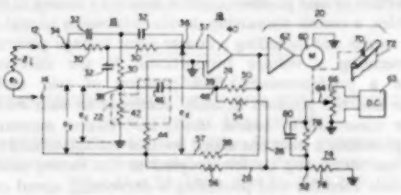
A power feed regulator system for temperature regulation and the like includes an input analog circuit which provides a control signal related both to ambient temperature and to a preset control point. The control signal is amplified and applied both to the inverting input of a first power feed regulator and to the noninverting input of a second power feed regulator. Depending on whether the signal is positive or negative, only one or the other power feed regulator is operated and actuates a triggering circuit which starts up a servo motor provided for turning on or off an appliance such as a hot water supply valve. Each power feed regulator has a hysteresis comparator comprising an operational amplifier, a resistor and a capacitor in series between the output of the amplifier and the ground with a feedback loop applying to the inverting input of the power feed regulator a part of the voltage between the terminals of the capacitor. The power feed regulator delivers an output periodic square-wave voltage having lower and higher values independent of its input voltage and an average power substantially proportional to the input voltage.

3,639,825

NULL-BALANCE SYSTEM WITH ENHANCED NOTCH-TYPE INPUT FILTER

Samuel J. MacMullan, Newtown, Pa., assignor to Leeds & Northrup Company, Philadelphia, Pa.

Filed Mar. 13, 1970, Ser. No. 19,235
Int. Cl. G05b 6/02
U.S. Cl. 318—621 13 Claims



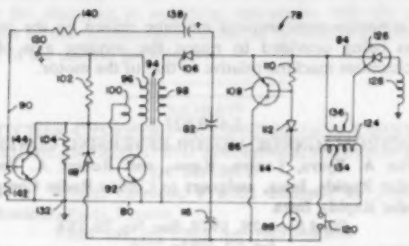
A null-balance system having a twin-T input filter, a high-impedance amplifier, and an output circuit having a large time constant. A feedback circuit between the amplifier output and the common terminal of the twin-T filter in combination with an RC circuit connected to the common terminal enhances the frequency response characteristic of the filter signal for null-balance comparison with the input is not affected by the twin-T filter. Another feedback circuit between the output circuit and the common terminal of the twin-T filter provides compensation so that the null-balance feedback circuit between the output circuit and the input of the amplifier provides a signal for null-balance comparison with an unknown input signal.

3,639,826

ELECTRONIC CONTROL CIRCUIT

Kenneth Grundberg, 3012 Maplewood, Royal Oak, Mich.

Continuation-in-part of application Ser. No. 701,384, Jan. 29, 1968, now abandoned. This application Mar. 12, 1970, Ser. No. 18,010
Int. Cl. H02m 3/32; H05b
U.S. Cl. 321—2 6 Claims



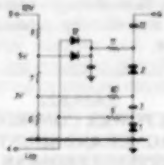
An electronic control circuit for providing an output signal for missile firing or the like comprising a source of oscillating electrical energy, structure for storing a predetermined amount of electrical energy, an electrical reactance for transferring the oscillating electrical energy into the storage structure, means for limiting the electrical charge stored in the storage structure and for indicating the storage structure is charged, trigger structure for providing a controlled discharge of the stored energy to provide the output signal, and means for shutting off the source of alternating electrical energy during discharge of the storage means.

3,639,827

CIRCUIT ARRANGEMENT FOR FORMING A VARIABLE REACTIVE IMPEDANCE

Horst Behlen, Wilferdingen, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 26, 1970, Ser. No. 66,956
Int. Cl. H03h 11/00; H03b 3/04
U.S. Cl. 323—74 4 Claims



A circuit arrangement for forming a variable reactive impedance having at least two variable capacitance (varactor) diodes which are biased in the reverse direction. The value of the reactive impedance being almost linearly dependent upon the applied control voltage, and the varactor diodes, of which the first one is directly applied to the control voltage, are

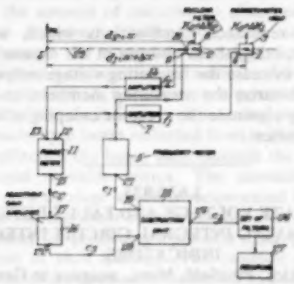
connected in series. A voltage divider is applied to a fixed voltage, for adjusting the remaining varactor diodes to predetermined capacitance values. To the base point of the voltage divider there is connected the first varactor diode and one pole of the source of control voltage.

3,639,828

COMPENSATION OF PARASITIC OR STRAY MAGNETIC FIELDS, ESPECIALLY ABOARD AN AIRCRAFT

Antoine Salvi, Fontaine, France, assignor to Commissariat a L'Energie Atomique, Paris, France

Filed Oct. 15, 1969, Ser. No. 866,501
Claims priority, application France, Oct. 17, 1968, 170,274
Int. Cl. G01r 33/08
U.S. Cl. 324—0.5 **15 Claims**



A magnetometer head generates a e.m.f. f_1 at a frequency ϕ_1 proportional to $(H_o+\Delta H_1)$, value of the total magnetic field intensity at a first point aboard a plane or similar object; a frequency meter derives from frequency f_1 a voltage e_1 proportional to ϕ_1; at a second point (located aboard said plane or object), where the magnetic field intensity is $(H_o+\Delta H_2)$, a nuclear filter is fed by e.m.f. f_1 and delivers an e.m.f. f_2 out of phase with f_1 by $d\phi$ proportional to $(\Delta H_2-\Delta H_1)$; a phase-meter is fed by f_1 and f_2 and delivers a voltage e_2 proportional to $d\phi$; an amplifier having an adjustable gain amplifies the output of said phase-meter and delivers a voltage e_3; a subtraction unit receives voltages e_1 and e_3 and delivers a voltage e_4 proportional to (e_1-e_3), said voltage e_4 being a measure of the external magnetic field H_o to be measured as e_1 is proportional to $(H_o+\Delta H_1)$ and e_3 is proportional (with the same proportionality factor) to ΔH_1 if $\Delta x=x(\sqrt[3]{\rho}-1)$ and $k_2\phi/k_1=x/3$

with

ΔH_1 parasitic magnetic field in the first point,
ΔH_2 parasitic magnetic field in the second point,
Δx distance between the first and the second point,
x distance of the first point from the barycenter of the parasitic magnetic sources,
k_1 the proportionality factor between f_1 and $(H_o+\Delta AH_1)$,
k_2 the proportionality factor between f_2 and (ΔH_2-H_1),
ϕ (function of x) adjustable gain of said amplifier,
ρ ratio between ΔH_2 and ΔH_1, i.e. $\rho=\Delta H_2/\Delta H$

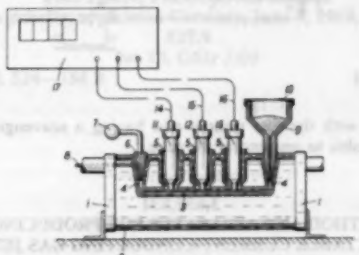
In a modification, at the first point a magnetometerhead, identical to the head located in the first point, is substituted to said filter, and a differential frequency-meter fed by the outputs of both heads is substituted to said phase-meter.

3,639,829

MEASURING INSTRUMENT FOR THE DETERMINATION OF THE PARTIAL PRESSURE OF OXYGEN AND CARBON DIOXIDE AND OF THE PH VALUE OF A BLOOD SAMPLE

Karl Harnoncourt, Graz, Austria, assignor to Hans List, Graz, Austria

Filed Apr. 22, 1969, Ser. No. 818,288
Claims priority, application Austria, Apr. 30, 1968, A 4208/68
Int. Cl. G01n 27/42
U.S. Cl. 324—30 R **2 Claims**



A measuring instrument and system for the determination of the partial oxygen and carbon dioxide pressures and of the pH value of a blood test sample having a thermostatized measuring vessel with a measuring capillary tube inserted therein to contain the blood test sample with three receiving bores in the measuring vessel and three measuring electrode units one of which being oxygen sensitive with the second carbon dioxide sensitive and the third being pH sensitive. Each of the measuring sensors are in contact with the said blood test sample and a measuring and recording device for electrode conductively connected with one of the measuring electrode units with a conical receiving bore provided on the measuring vessel. Three control bores terminate in the conical receiving bore and a switch element is inserted in the receiving bore to register with the control bores in three different positions with a pumping device providing for alternate suction and delivery strokes and a pipeline connects the pumping device with the control bores. A gas intake pipe connects the pressure tank with the second control bore and a suction pump and a suction pipe connect the latter with the third control bore and a conical filler connection is mounted on the measuring vessel and is connected with the extremity of the measuring capillary tube opposite the switch member.

3,639,830

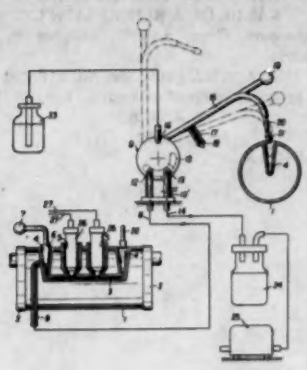
ATTACHMENT FOR THE MICROANALYSIS OF BLOOD GASES

Karl Harnoncourt, Graz, Austria, assignor to Hans List, Graz, Austria

Filed Apr. 23, 1969, Ser. No. 818,560
Claims priority, application Austria, Apr. 30, 1968, A 4209/68
Int. Cl. G01n 27/42
U.S. Cl. 324—30 R **4 Claims**

An attachment for the cleaning and drying of measuring capillary tubes for the microanalysis of blood gases having a

measuring vessel containing the capillary tube to receive a blood test sample and a measuring electrode arrangement in



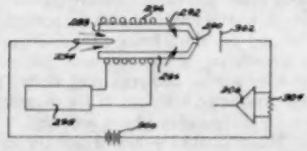
contact with the test sample and having a scavenging duct connectable to one end of the tube.

3,639,831

METHOD AND APPARATUS FOR PRODUCING A DIRECTABLE CURRENT-CONDUCTING GAS JET FOR USE IN A METHOD FOR INSPECTING AND MEASURING NONCONDUCTIVE FILM COATINGS ON CONDUCTIVE SUBSTRATES

Charles Richard Cushman, Broomfield, Colo., assignor to Autometrics Co., Boulder, Colo.

Filed Nov. 12, 1968, Ser. No. 774,758
Int. Cl. G01n *27/62*
U.S. Cl. 324—33 **14 Claims**



A method and apparatus for producing a directable, electrically conducting gas jet along a path across a test zone, passing an electric current along the jet paths and detecting variations in the current flow in the gas jet stream as a function of the presence of anomalies in the path or changes in the path dimensions. Such anomalies include, but are not limited to, insulators, conductors and semiconductors, gases diffusing into the stream, particulate solids introduced into the stream, electric fields parallel and traverse to the stream and variations in bias potential.

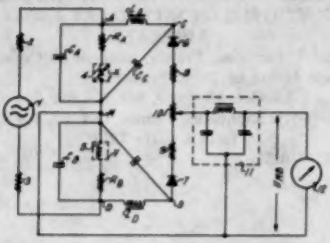
3,639,832

ELECTRICAL BRIDGE APPARATUS FOR AND METHOD OF MEASURING MECHANICAL FORCES BY MAGNETOELASTIC MEMBERS

Hermann Goebbels, Brockenberg, Germany, assignor to EMA-Dorries GmbH, Stolberg, Germany

Filed Dec. 11, 1969, Ser. No. 884,130
Int. Cl. G01r *33/00*
U.S. Cl. 324—34 R **3 Claims**

Force-measuring apparatus and method employing two similar measuring members, one loaded and the other unloaded, carrying magnetizing windings disposed in different branches of a bridge energized by alternating current. The present invention changes the energy relationships of the magnetizing fields by providing additional measuring circuits and auxiliary circuits with inductive, capacitive and ohmic



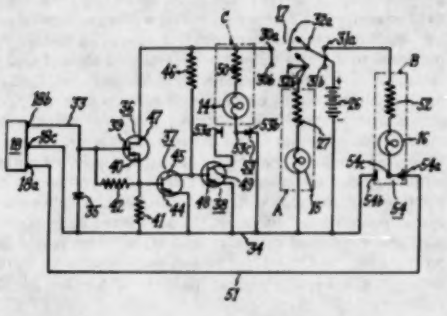
resistance or resistance combinations which, when load changes occur, bring about changes in the measuring potential such as to increase the measuring voltage output, at least substantially linearize the measuring members, and substantially or wholly eliminate the creep or creeping effects of the measuring members.

3,639,833

SOLID-STATE VOLTAGE AND FAULT DETECTOR MEANS HAVING INTEGRAL CIRCUIT INTEGRITY INDICATORS

Henry N. Tachick, Pittsfield, Mass., assignor to General Electric Company

Filed May 11, 1970, Ser. No. 36,053
Int. Cl. G01r *31/02*
U.S. Cl. 324—51 **7 Claims**



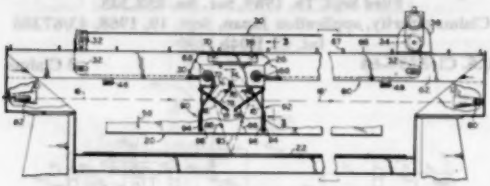
Solid-state detector circuit and portable circuit housing for safely sensing the presence of a voltage or a fault in a high-voltage electric power distribution system. The apparatus is housed in a unitary case and is provided with interchangeable probes to permit it to be either directly or indirectly coupled to a circuit under test. Integral indicating means are provided for selectively monitoring the integrity of the detector circuit to assure its operability before and after it is used on a high-voltage circuit, thereby affording a safeguard for personnel using information provided by the detector.

3,639,834

MICROWAVE MOISTURE MEASUREMENT APPARATUS HAVING MOVABLE MIRROR SCANNING MEANS

Charles W. E. Walker, 855 McBride Blvd., Apt. 307, New Westminster, British Columbia, Canada

Filed Apr. 17, 1970, Ser. No. 29,441
Int. Cl. G01r 27/04
U.S. Cl. 324—58.5 B 15 Claims



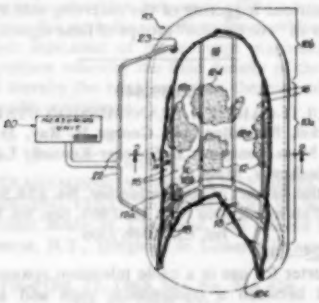
A microwave apparatus for measuring the moisture content of sheet material by producing a moisture signal proportional to the amount of microwaves absorbed by the water therein is described which employs a movable mirror scanning means for scanning the sheet material with a microwave beam transmitted between fixed transmitting and receiving antennas. A fixed mirror is positioned on the opposite side of the sheet from such scanning means for receiving the microwave beam reflected from a first movable mirror and reflecting the beam back through the sheet material to a second movable mirror. The movable mirrors are mounted on a carriage which is reciprocated back and forth across the moving sheet by a reversible motor coupled to a potentiometer for producing a position signal proportional to the position of such carriage. This position signal and the moisture signal are applied to the inputs of a computer for indicating the percentage moisture content of a sheet portion and its position on the sheet. The microwave beam passes through the sheet at an acute angle, in the range of 40° to 65°, to prevent standing wave interference distortion of the microwave beam. A telescope and light source are employed for optical alignment of the antennas and the movable mirrors.

3,639,835

CAPACITIVE TANK GAGING APPARATUS BEING INDEPENDENT OF LIQUID DISTRIBUTION

Alvin H. Dammig, Jr., Readville; Arthur E. Sherburne, Bedford, and Rodney A. Brooks, Lexington, all of Mass., assignors to National Aeronautics and Space Administration under the provisions of 42 U.S.C. 2457(d)

Filed Jan. 27, 1967, Ser. No. 612,265
Int. Cl. G01r 27/26; G01j 23/00
U.S. Cl. 324—61 9 Claims



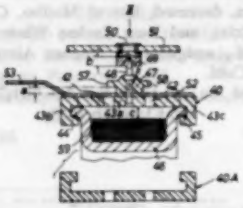
Capacitive gaging apparatus for fluid measurement. Longitudinally extending electrodes are circumferentially disposed on the interior of an elongated container or conduit and energized by a time variable signal to generate a uniform electric field across the container or conduit. In one embodiment, transverse fields are generated across the container. Changes in energizing current are converted to indicate liquid quantity or density. The electrodes may be shielded, formed of variable widths and energized to produce at least alternately orthagonal electric fields to obtain maximum accuracy.

3,639,836

MOVING-COIL ASSEMBLY FOR ELECTRICAL MEASURING INSTRUMENTS

Willy Kisselmann, Grunwald; Fritz Rumpelein, Munchen; Paul Kopf, and Franz Landbrecht, both of Unterhaching, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed June 4, 1969, Ser. No. 830,328
Claims priority, application Germany, June 7, 1968, P 17 66 527.9
Int. Cl. G01r 1/00
U.S. Cl. 324—154 R 10 Claims



The moving-coil assembly of a moving-coil electrical measuring instrument comprises two coaxial staffs extending into recesses provided in two stationary bearings and mounted on elastic sections of plastic carriers which are secured to the coil-supporting frame. The extent of flexing of the elastic sections is limited by stops provided on the carriers in such a way that the tips of staffs cannot leave their recesses when the sections are flexed in response to shocks and that the sections cannot contact the outermost windings of the coil which is convoluted around the frame.

3,639,837

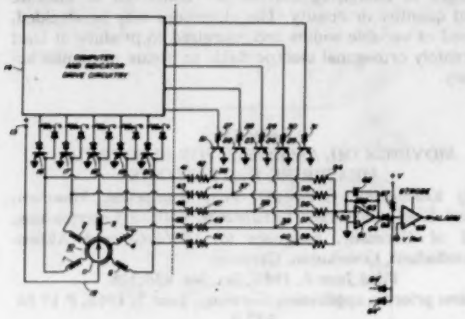
METHODS OF AND APPARATUS FOR TESTING ELECTROMAGNETIC INDICATORS

Marvin Masel, Teaneck, and Albert J. Wedlake, Totowa, both of N.J., assignors to The Singer Company, New York, N.Y.

Filed Sept. 23, 1970, Ser. No. 74,781
Int. Cl. G01r 35/00, 35/02
U.S. Cl. 324—158 R 9 Claims

An electromagnetic indicator can be tested to determine whether or not it is properly positioned to the desired indicia. This is achieved by applying electrical signals to two stator windings of the electromagnetic indicator so as to induce an electrical signal in a third of the stator windings. The induced signal varies depending upon the position of the indicia of the

electromagnetic indicator. The stator windings are selected such that an induced signal of predetermined phase and of



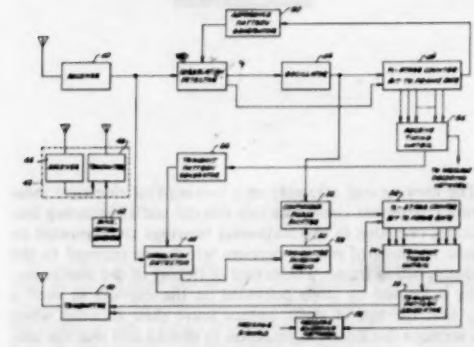
predetermined magnitude is obtained for an accurately positioned indicia.

3,639,838

SYNCHRONIZED VARIABLE DELAY TIME DIVISION COMMUNICATION SYSTEM

Henry G. Kuhn, deceased, late of Malibu, Calif. (by Alida Kuhn, executrix), and Ross Corless Winterbottom, Santa Monica, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 30, 1968, Ser. No. 701,786
Int. Cl. H04b 7/20
U.S. Cl. 325—4 **4 Claims**



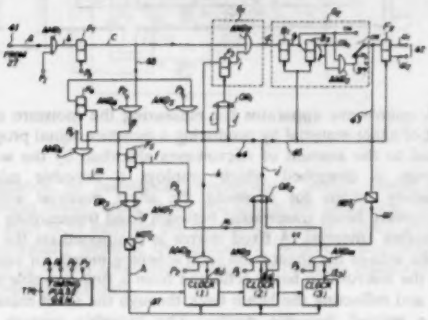
A locally-generated reference sync signal and the master sync signal received from the repeater are compared in time of occurrence to develop an error signal which varies the frequency of a controllable oscillator to synchronize the reference sync signal to the master sync signal. A counter and timing matrix in the master sync loop controls the generation of own-sync reference signals during the station's time slot. The own-sync reference signals are compared in time of occurrence with the own-sync signals as received via the repeater to develop an error signal which varies the phase of a continuously variable phase shifter to synchronize the own-sync generator to the own-sync reference signals. In another embodiment, the range to the repeater obtained by means of a ranging signal is compared with the time difference between the output of the counter and timing matrix in the master sync loop, and the output of the transmit counter and timing matrix. The resultant error signal varies the phase of the continuously variable phase shifter to correct the timing of the transmit control circuits.

3,639,839

BROADCAST SYSTEM FOR A CONTROL SIGNAL

Masayuki Fukata, 94, Shimorenjaku, Mitaka-shi, Tokyo, Japan

Filed Sept. 16, 1969, Ser. No. 858,345
Claims priority, application Japan, Sept. 19, 1968, 43/67286
Int. Cl. H04b 1/00
U.S. Cl. 325—64 **3 Claims**



A system for controlling, from the sending side, the receiving side in a broadcast system using an intermittent control signal, where a false signal similar to the regular control signal is detected from the broadcast signals before the receiving side is spuriously triggered by the false signal, and elimination filter means is inserted in the path of the broadcast signal during only a predetermined time to eliminate the same frequency components as the control signal, whereby the control signal can be transmitted with no chance of spurious triggering. In this case, the false signal is detected from the broadcast signals by the use of a first decision means for deciding false signals having only spaces each less than a first time t_1 as a single group of false signals, a second decision means for deciding successive two groups of false signals detected by the first decision means as "continuous" if a space between the successive two groups of false signals is less than a second time t_2 longer than the first time t_1 and for deciding the later of the successive two groups of false signals detected by the first decision means as a new group of false signals if a space between the successive two groups of false signals is longer than the second time t_2, and a third decision means for deciding a predetermined state just before the possible spurious triggering of the receiving side by counting the number of "continuous" groups of false signals.

3,639,840

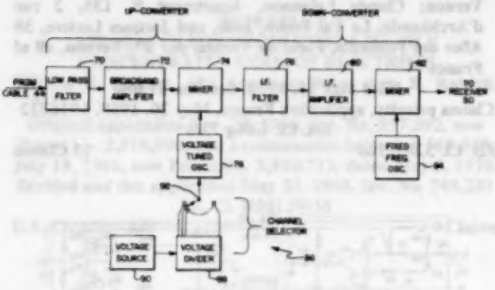
MULTI-CARRIER TRANSMISSION SYSTEM

Jacob Shekel, Brookline, and George H. Ray, Jr., Woburn, both of Mass., assignors to Spencer-Kennedy Laboratories, Inc., Winchester, Mass.

Continuation-in-part of application Ser. No. 814,340, Apr. 8, 1969. This application Nov. 28, 1969, Ser. No. 880,839
Int. Cl. H04b 1/06
U.S. Cl. 325—308 **15 Claims**

A converter for use in a cable television system and interconnected between a transmission path and a television receiver for selecting any one of a plurality of television signals carried by the transmission path. The converter includes a broadband section for translating all received television signals to intermediate frequencies higher than the

frequencies of the received television signals such that no images appear within the band of input signals. A selected one of the television signals at a predetermined higher intermediate frequency is then translated by a narrow band section to a lower frequency of a predetermined television channel for reception by the television receiver.

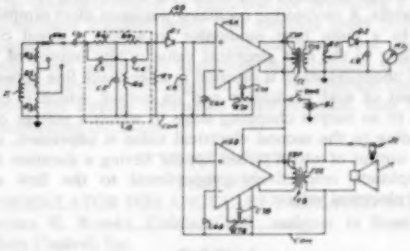


3,639,841

ELECTROMAGNETIC ENERGY DOSIMETER

Alfred W. Richardson, 318 Anthony Hall, Southern Illinois Universtiy, Carbondale, Ill.

Filed Jan. 16, 1970, Ser. No. 3,366
Int. Cl. H04b *1/00*
U.S. Cl. 325—363 **11 Claims**



Miniaturized dosimeter apparatus monitors the field density of radiated pulsed electromagnetic energy. An elongate cylindrical coil is used as a pickup and is positioned so that one-half of the coil protrudes from a small metallic case for the apparatus, providing uniform response substantially over a spherical angle of at least 180°. Means is interconnected with the coil for producing a periodic waveform having an average magnitude varying as a function of the field density of the radiated energy and having a period inversely proportional to the pulse repetition frequency of the energy. Means is responsive to this periodic waveform for providing a readily perceptible indication of the average magnitude of the periodic waveform whereby the field density of the radiated energy, and thereby the relative human thermogenic dosage thereof, is readily monitored.

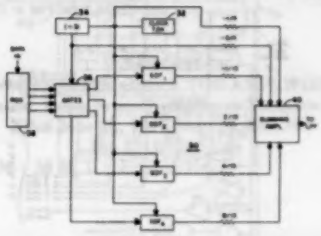
3,639,842

DATA TRANSMISSION SYSTEM FOR DIRECTLY GENERATING VESTIGIAL SIDEBAND SIGNALS

Carl J. Zarcone; Bruce M. Cleveland, and Donald F. Smith, all of Monroe, N.Y., assignors to General Dynamics Corporation

Filed Oct. 17, 1968, Ser. No. 768,426
Int. Cl. H03k *5/13*
U.S. Cl. 328—61 **5 Claims**

A system and technique for generating vestigial sideband signals capable of carrying digital information at high-bit rates is described. The bits are circulated through one or more delay lines and weighted samples are taken at a rate higher than the highest frequency of the sideband to be transmitted. The samples may be summed, directly or in weighted relationship when a multilevel signal is desired, to provide an output signal. This output signal is filtered to remove those frequencies which lie above the band which is to be transmitted through the channel and thereupon applied to the channel. By apportioning the weight of each sample in accordance with the spectral characteristics of the channel, the output signal will be readily accommodated by the channel and be transmitted therethrough with least distortion.

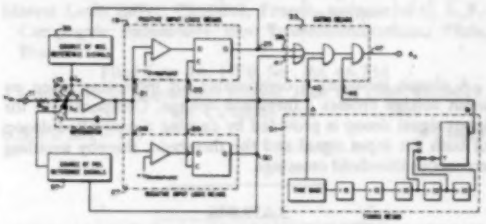


3,639,843

VOLTAGE TO PULSE-RATIO CONVERTER

Rolf Schmidhauser, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed July 20, 1970, Ser. No. 56,577
Int. Cl. H03k *5/20*
U.S. Cl. 328—116 **6 Claims**



A voltage to pulse-ratio converter having an integrator, a source of reference signals, timing, gating, and logic means arranged to balance an applied input signal with a reference signal during a number N_2 of complete clock periods in a measurement period, there being N clock periods in a measurement period where N is an integer, such that the ratio N_2/N of the number N_2 of clock periods that the reference signal is applied to the number N of clock periods in a measurement period is proportional to the magnitude of the input signal.

3,639,844

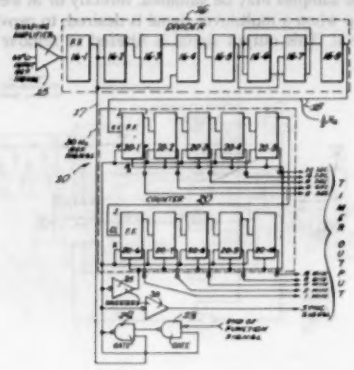
ELECTRONIC TIMER FOR A MULTIPLE FUNCTION APPLIANCE

Joseph Karklys, St. Joseph, Mich., assignor to Whirlpool Corporation

Filed June 27, 1969, Ser. No. 837,179
Int. Cl. G01r *29/02;* **H03k** *5/00*
U.S. Cl. 328—130 **14 Claims**

An electronic timer for a multiple function appliance, having a source of alternating reference signal connected with a

divider which provides a signal at a submultiple of the reference signal frequency. A series of J–K flip-flops forms a



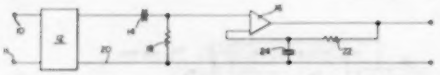
counter which establishes plural timing periods. On termination of a function of the appliance, the counter is automatically reset.

3,639,845

COMPENSATING THRESHOLD LEVEL DETECTOR

Arthur F. Camp, Jr., Redington Beach, Fla., and Harry W. Getz, Phoenix, Ariz., assignors to General Electric Company

Filed Nov. 19, 1970, Ser. No. 91,031
Int. Cl. H03b *3/02;* **H03k** *5/20*
U.S. Cl. 328—146 **2 Claims**



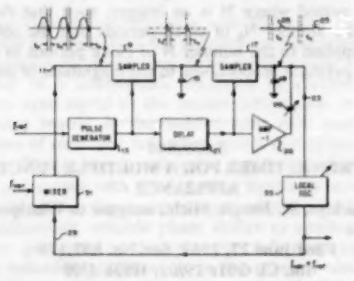
A circuit including a comparator for indicating when an input voltage crosses a threshold voltage. Compensation for input signal droop is provided by causing a controlled droop of both the input signal and the threshold, thereby avoiding erroneous threshold crossings.

3,639,846

TANDEM SAMPLING CONTROLLER USING DELAYED OPERATION OF PLURAL SAMPLING GATES

Gregory Justice, Mountain View, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 11, 1970, Ser. No. 18,649
Int. Cl. H03k *17/00*
U.S. Cl. 328—151 **3 Claims**



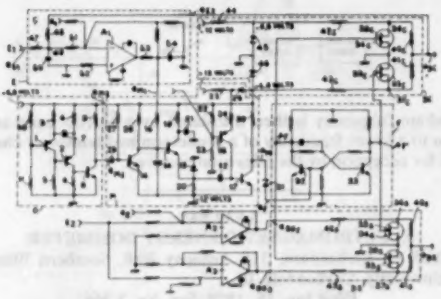
A signal sampler is arranged to sample the output of a preceding signal sampler to produce a DC control signal having extremely low-level amplitude variations.

3,639,847

CIRCUIT FOR MULTIPLYING TWO ELECTRICAL VALUES

Claude Remy, 21 Allee Circulaire, Foret de Vernon par 27, Vernon; Claude Lejannou, Apartment B. 135, 2 rue d'Archimede, Le Val Foure, Jolie, and Jacques Leclere, 39 Allee des Penitents, Foret de Vernon par 27, Vernon, all of France

Filed May 15, 1970, Ser. No. 37,680
Claims priority, application France, May 20, 1969, 6916222
Int. Cl. G06g *7/00*
U.S. Cl. 328—160 **13 Claims**



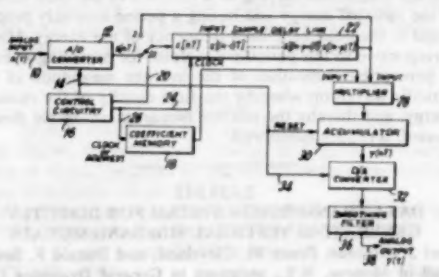
This invention relates to a circuit for multiplying two electrical values. A monitoring oscillator transmits short sampling pulses to a pulse time modulator to which a signal corresponding to the first electrical value is also impressed. A control chopping stage is inserted in a feedback line between the input of said modulator and its output, which is connected to an output chopping stage to which a voltage corresponding to the second electrical value is impressed, and on the output of which pulses appear having a duration and an amplitude respectively proportional to the first and second electrical values.

3,639,848

TRANSVERSE DIGITAL FILTER

James W. Elliott, Largo, Fla., assignor to Electronic Communications Inc., Petersburg, Fla.

Filed Feb. 20, 1970, Ser. No. 13,098
Int. Cl. H03k *13/02*
U.S. Cl. 328—167 **10 Claims**



A digital transversal filter converts an input analog signal into a plurality of digital components which are transferred into a storage device. Those components are thereafter sequentially multiplied by predetermined coefficients stored in a circulating memory. The combined products of the coef-

ficients and the components constitute an output digital word which is thereafter converted to an analog signal bearing a predetermined functional relationship to the input signal.

3,639,849

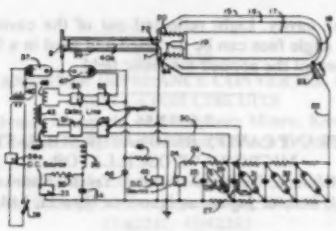
APPARATUS FOR PRODUCING A HIGHLY CONCENTRATED BEAM OF ELECTRONS

Willard H. Bennett, 604 Appleton Drive, Apt. B, Raleigh, N.C.

Original application Nov. 28, 1966, Ser. No. 597,392, now Patent No. 3,516,906, and a continuation-in-part of 569,549, July 19, 1966, now Patent No. 3,510,713, dated May 5, 1970. Divided and this application May 20, 1968, Ser. No. 749,231

Int. Cl. H01j *29/56*

U.S. Cl. 328—228 **9 Claims**



The invention resides in apparatus for producing a highly concentrated electron beam. The electron beam producing apparatus is arranged to collimate the beam, and the collimated beam passes into apparatus that produces a pinched discharge having a self-magnetic field. The pinched discharge pinches the already collimated electron beam, thus further concentrating the same.

3,639,850

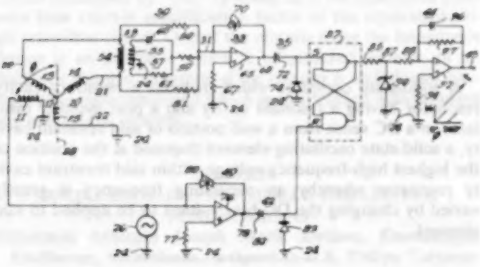
DEMODULATOR FOR ANGULARLY RELATED SIGNALS

Herman H. Brooks, Goleta, Calif., assignor to Sundstrand Data Control, Inc.

Filed Sept. 16, 1969, Ser. No. 858,486

Int. Cl. H03d *3/18*

U.S. Cl. 329—50 **6 Claims**



A demodulator for signals angularly related to the position of a rotor of a synchro or resolver uses, in one embodiment, only one transformer in a circuit for subtracting, adding, and phase shifting the signals to produce a single signal phase shifted in proportion to the rotor angle. In another embodiment, a transformerless circuit uses an operational amplifier to derive the phase shifted signal. The phase shifted signal is compared with a reference signal to produce a rectangular wave with a variable duty cycle, which is integrated to produce a DC voltage representing the rotor angle. A pair of the circuits are used in an altitude warning system connected to synchros for the actual altitude and the command altitude of an aircraft. The derived phase shifted signals from both synchros are compared to produce a rectangular wave with a variable duty cycle, which is integrated and compared with voltages representing preselected altitudes to indicate when the aircraft is at those altitudes.

3,639,851

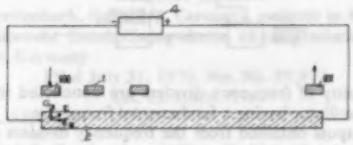
NOVEL SEMICONDUCTOR AMPLIFIER

Felix Diamond, Paris, France, assignor to Thomson-CSF

Filed June 26, 1969, Ser. No. 836,784

Int. Cl. H03f *3/14*

U.S. Cl. 330—38 M **5 Claims**



The present invention invention relates to a semiconductor-type travelling wave structure. A thin extrinsic semiconductor strip is located in the field of a delay line; a continuous field is applied between the two ends of the strip; the line has an HF input and an HF output.

3,639,852

CONTROL ARRANGEMENT FOR NARROW BAND SWITCHING FILTER

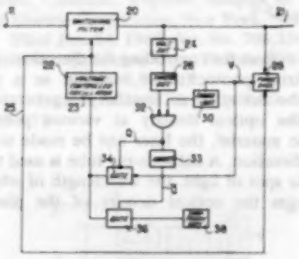
Marcel Louis Boyer, Chatillon, France, assignor to C. I. F.-Compagnie Industrielle Des Telecommunications, Paris, France

Filed June 16, 1970, Ser. No. 46,734

Claims priority, application France, June 16, 1969, 6920019

Int. Cl. H04b *3/04*

U.S. Cl. 331—1 A **6 Claims**



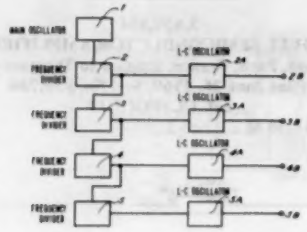
A switching-type matching filter whose switching frequency is extracted from the incident signal, characterized in that it comprises a switching frequency control loop comprising an electronically regulated oscillator, a phase discriminator supplied, on the one hand with a filtered frequency, on the other hand with the frequency of the said oscillator, as well as means for bringing the said oscillator within the coverage range of the phase discriminator and for keeping it within that range if the signal leaving the filter corresponds to predetermined conditions.

3,639,853

TONE OSCILLATOR FOR AN ELECTRONIC MUSICAL INSTRUMENT

Tadao Sakai, No. 767-11, Uenoshiba, Mu Rogaoka, 3-chome, Sakai-shi, Osaka, Japan

Filed Aug. 21, 1970, Ser. No. 65,806
Claims priority, application Japan, Mar. 27, 1970, 45/26192
Int. Cl. H03b 5/08
U.S. Cl. 331—51 3 Claims



A plurality of frequency dividers are connected in series with an oscillator having a fundamental frequency.

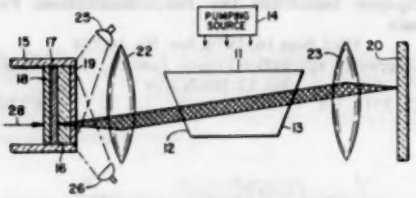
The outputs obtained from the frequency dividers are applied to a plurality of L-C oscillating circuits. Each L-C oscillating circuit produces a sinusoidal and a complex output signal which are combined to obtain a musical tone.

3,639,854

ELECTRON BEAM SCANLASER HAVING PHOTOCHROMIC Q-SPOILER

William J. Baldwin, West Roxbury, Mass., assignor to Corning Glass Works, Corning, N.Y.

Filed Nov. 22, 1968, Ser. No. 778,231
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 18 Claims



An optical system for controlling the direction of lasing action by utilizing photochromic material as a passive Q-switcher in the cavity of an angularly degenerate laser. By controlling the optical density at various points on the photochromic material, the laser can be made to radiate in any desired direction. A cathode-ray tube is used to generate a controllable spot of light, the wavelength of which is such that it changes the optical density of the photochromic material.

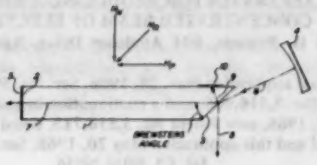
3,639,855

LASER DEVICES

Joseph F. Dillon, Jr., Morris Township, Morris County, and Charles G. B. Garrett, Morristown, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Continuation of application Ser. No. 577,010, Sept. 2, 1966. This application Dec. 19, 1969, Ser. No. 882,773
Int. Cl. H01s 3/14, 3/05; G02f 1/22
U.S. Cl. 331—94.5 1 Claim

A magnetically saturable laser rod (e.g. doped YIG) has one end cut at Brewster's angle and is included in an optical cavity. Modulation is accomplished, via Faraday's effect, by varying the direction of the rod magnetization and by using the Brewster's angle face as the polarization sensitive element in the cavity. Light reflected out of the cavity at the Brewster's angle face can be detected and used in a feedback sense to control the applied magnetic field.

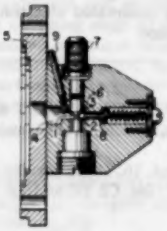


3,639,856

REENTRANT CAVITY RESONATOR SOLID-STATE MICROWAVE OSCILLATOR

Katuhiro Kimura, Toshima-ku, and Yoichi Kaneko, Kokubunji-shi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 16, 1970, Ser. No. 3,281
Claims priority, application Japan, Jan. 24, 1969, 44/4769
Int. Cl. H03b 7/14
U.S. Cl. 331—96 8 Claims



A solid-state oscillator which includes a reentrant cavity resonator having a resonant cavity and a post member insulated in a DC sense from a wall portion of said resonant cavity, a solid-state oscillating element disposed at the position of the highest high-frequency voltage within said reentrant cavity resonator whereby an oscillating frequency is greatly varied by changing the DC bias voltage to be applied to said element.

3,639,857

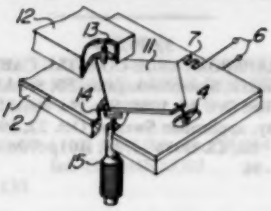
PLANAR-TYPE RESONATOR CIRCUIT

Takanori Okoshi, Tokyo, and Masatoshi Migitaka, Kodaira, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 30, 1970, Ser. No. 59,548
Claims priority, application Japan, Aug. 1, 1969, 44/60406
Int. Cl. H03b 7/14
U.S. Cl. 331—107 R 8 Claims

A planar-type resonator circuit comprising a conductive plate and a resonating conductive plate provided on said conductive plate in face-to-face fashion with a dielectric layer

disposed therebetween, said resonating conductive plate having an input portion on one end and an output portion on the



other end and also having decreasing widths towards the ends.

3,639,858

TRANSISTOR IMPEDANCE CONVERTER AND OSCILLATOR CIRCUITS

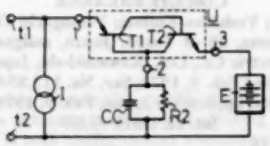
Takeo Miyata, Atsugi-chi, and Tsutomu Miura, Kawasaki-shi, both of Japan, assignors to Mitsumi Electric Company Ltd., Tokyo, Japan

Filed Aug. 26, 1969, Ser. No. 853,053

Claims priority, application Japan, Aug. 31, 1968, 43/62241; 43/62242; 43/62243

Int. Cl. H03b *5/12, 7/06*

U.S. Cl. 331—108 R **8 Claims**



An impedance device adapted to represent various types of impedance which includes a two-transistor circuit equivalent to a single transistor with a common base current amplification factor greater than one and a predetermined impedance element or circuit, and circuits using such an impedance device. This impedance device represents an impedance corresponding to the impedance of the impedance element or circuit multiplied by $-(\alpha_e-1)$ where α_e is the equivalent common base current amplification factor of the equivalent single-transistor circuit. One of the circuits using the impedance device is an oscillator which is constructed without an inductance element. Another of the circuits is an inductor having a pure inductance and which is constructed without using any inductance element.

3,639,859

OSCILLATOR HAVING SINGLE PARAMETER TUNING MEANS

Wilhelmus Antonius Joseph Marie Zwlisen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

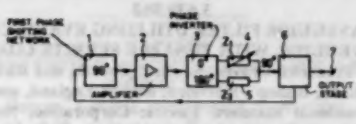
Filed Aug. 28, 1969, Ser. No. 853,884

Claims priority, application Netherlands, Sept. 2, 1968, 6812495

Int. Cl. H03b *5/24*

U.S. Cl. 331—108 B **6 Claims**

An oscillator having a first phase-shifting network, an inverting amplifier and a second phase-shifting network comprising two impedances; one of the impedances is externally adjustable and determines the frequency of the oscillator signal. A total phase shift of 180° is achieved by means of the first phase-shifting network which provides a phase shift of substantially 90° in a frequency independent manner and by



the second phase-shifting network which provides an additional phase shift of substantially 90° in a frequency-dependent manner.

3,639,860

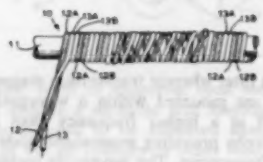
DELAY LINE

Otto Breitenbach, Nurnberg, Germany, assignor to Kabel-und Metallwerke Gutehoffnung-shutte Aktiengesellschaft, Hannover, Germany

Filed July 31, 1970, Ser. No. 59,872

Int. Cl. H03h *7/30*

U.S. Cl. 333—29 **3 Claims**



A delay line having outgoing and return conductors stranded together in a manner such that upon winding the stranded conductors about a core, two windings of the same conductor lie in abutting relation to each other, whereby to substantially increase the inductance of the line and to maximize the delay time for a minimum length of line.

3,639,861

MAGNETOSTRICTIVE FILTER AND STRAIN GAUGE

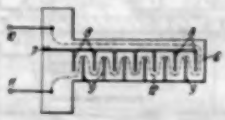
Albert Russen, Cheshunt, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 24, 1968, Ser. No. 700,230

Claims priority, application Great Britain, Feb. 24, 1967, 8,970/67

Int. Cl. H03h *9/22;* **H01v** *9/00*

U.S. Cl. 333—71 **2 Claims**



One or more layers of magnetostrictive material are arranged to have a meandering current running therethrough or through a closely spaced sheet of conductive material, to provide longitudinal, torsional or flexural modes of mechanical vibration. For torsional vibration a cylindrical structure having a spiral strip either conductive or magnetostrictive, is described. Copper or gold is deposited on the magnetostrictive material. Ladder filters using magnetostrictive structures

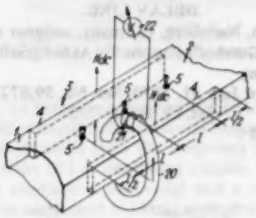
consist of a thin sheet with a layer of magnetostrictive material thereon suitably cut to provide a number of reeds.

3,639,862

WAVEGUIDE FILTER UTILIZING EVANESCENT WAVEGUIDE, WITH TUNABLE FERRITE LOADING

George Frederick Craven, Sawbridgeworth, and Richard Finnie Skedd, Bishop's Stortford, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 9, 1967, Ser. No. 681,637
Claims priority, application Great Britain, Nov. 30, 1966, 53,635/66
Int. Cl. H03h 7/00, 7/10
U.S. Cl. 333—73 W 9 Claims



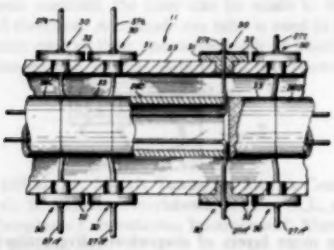
A waveguide filter wherein transversely magnetized ferrite-loading strips are mounted within a waveguide section to produce cutoff at a higher frequency than in an empty waveguide, thereby providing evanescent-mode operation at the operating frequencies. The waveguide section is then terminated in a capacitive reactance which at the center frequency of the desired passband is the conjugate of the positive imaginary characteristic impedance of the length of evanescent waveguide. Means for varying the magnetic field applied to the ferrite-loading strips is provided for tuning the filter over a predetermined range of passband frequencies.

3,639,863

RADIOFREQUENCY FEEDTHROUGH

Stephen R. Monaghan, Harvard, and Jerome D. Hanfling, Framingham, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed June 22, 1970, Ser. No. 48,233
Int. Cl. H01h 7/14
U.S. Cl. 333—79 5 Claims



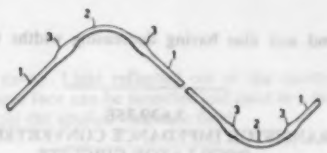
A feedthrough for supporting a wire passing through the wall of a waveguide into a radiofrequency field. The body of the feedthrough is made from a lossy dielectric material and is formed so that its outer portion overlies the outer wall of the waveguide. The outer surface of the feedthrough supports a metallic film which in combination with the outer surface of the waveguide forms a radial transmission line. The dimensions of the feedthrough are such as to form a low Q resonant cavity for the resonant frequency field.

3,639,864

TRANSPORTABLE COAXIAL CABLE

Bernt Klostermark, Smedsbacksgatan 3B, Stockholm, Sweden

Filed Oct. 14, 1969, Ser. No. 866,314
Claims priority, application Sweden, Oct. 22, 1968, 14245/68
Int. Cl. H01b 11/18; H01p 3/06
U.S. Cl. 333—96 9 Claims



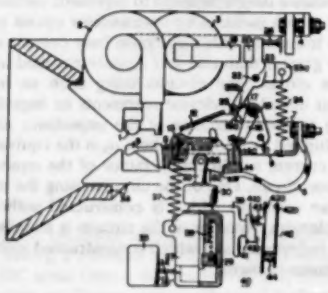
Coaxial cable for connection between an antenna and a receiver in nonpermanent or mobile installations. The cable is joined by short lengths of bendable sections thereby enabling the cable to be folded into an easily transportable unit.

3,639,865

CIRCUIT BREAKER

Chuzo Takeda; Yoshihiro Kojima; Yamaguchi Toshiyuki, and Yasuo Ariyama, all of Tokyo, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Feb. 9, 1971, Ser. No. 113,854
Claims priority, application Japan, Feb. 9, 1970, 45/10901
Int. Cl. H01h 75/00
U.S. Cl. 335—18 11 Claims



A circuit breaker is provided which is capable of effecting an instant cutoff when excess current is introduced while the circuit breaker is in operation. In addition, the circuit breaker has means cooperatively associated therewith for selectively indicating normal cutoffs and those arising because of excess current from the condition in which the contact members are engaged during normal operation. In this device, a movable arm rotatably disposed on a second rotatably mounted arm has a contact secured to one end which detachably contacts a fixed contact to switch a circuit. Means are provided for normally urging the first movable arm in a direction to separate the contacts. A driving device for displacing the first movable arm and the second movably arm jointly through an engaging mechanism connected therebetween causes the contacts to engage, and another

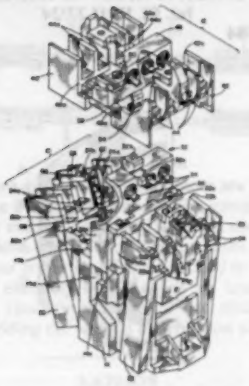
device responsive to an excess current sensing means is provided for disengaging the engaging mechanism to permit the contacts to be separated in such cases, even while the circuit breaker is being normally operated.

3,639,866

CONSTANT ACTUATING FORCE ARRANGEMENT FOR A RELAY AND A RELAY-ADDER COMBINATION

Hugh Kane, Freeport, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 12, 1970, Ser. No. 79,904
Int. Cl. H01h 67/02
U.S. Cl. 335—132 **5 Claims**



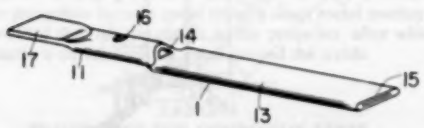
A relay and a relay-adder combination incorporating a constant force actuating arrangement allowing for the use of the same coil in both configurations whereby a reaction force which is encountered in the actuation of the relay per se is bypassed in the actuation of the relay-adder combination and is replaced by the force which is encountered in the actuation of the adder and which is equal to the reaction force.

3,639,867

REED SWITCH

Shigeru Tanimura, Kyoto; Norio Maejima, Kameoka; Kilokazu Yoshimura, Osaka, and Seisuke Hinoda, Ikeda, all of Japan, assignors to Omron Tateisi Electronics Co., Ukyo-ku, Kyoto, Japan

Filed Mar. 17, 1970, Ser. No. 20,336
Claims priority, application Japan, Mar. 17, 1969, 44/20189
Int. Cl. H01h 51/28
U.S. Cl. 335—154 **5 Claims**



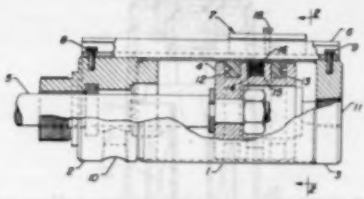
A sealed switch having at least two reed-shaped magnetic poles of resilient metal, which respond to the surrounding magnetic field and cause contacts on their free ends to touch to each other, and also having an atmosphere confined to the area of and around said poles by a sealing means thereabout, which switch is characterized in that at least one of said reed-shaped poles is a partly flattened pipe of magnetic metal. The part of said metal pipe, which is bonded to a sealing means such as a glass envelope, may be utilized as a tube for exhausting air from and admitting the confined gas to the envelope.

3,639,868

MAGNETIC SWITCH MOUNTING MEANS FOR A FLUID MOTOR UNIT

Ralph L. Gasper, Lansing, and Donald E. Riordan, Tinley Park, both of Ill., assignors to Bimba Manufacturing Company, Monee, Ill.

Filed Mar. 17, 1971, Ser. No. 125,282
Int. Cl. H01h 9/00
U.S. Cl. 335—205 **6 Claims**



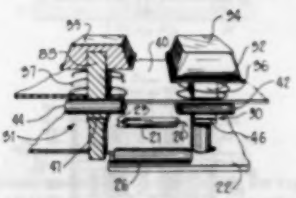
An adjustable form of magnetic reed switch mounting means which utilizes a movable arm member in a slotted track member adapted to be mounted along the exterior cylinder wall of the air cylinder or other fluid motor unit. A preferred form of the track has a cross section curved interior surface while the base portion of the arm member that moves in the track has corresponding curvature and is capable of having transverse angular rotation with respect to the track and to the air cylinder so as to be able to fit against different sized housings.

3,639,869

MAGNETICALLY LATCHED SWITCH ASSEMBLY

Egon A. Pedersen, Pleasanton, Calif., assignor to The Singer Company, New York, N.Y.

Filed Mar. 3, 1971, Ser. No. 120,570
Int. Cl. H01h 13/00, 3/12
U.S. Cl. 335—207 **11 Claims**



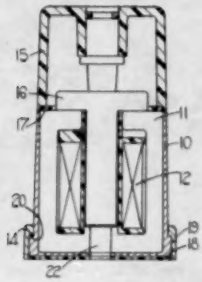
A magnetically latched switch assembly including a reed switch mounted on a baseplate adjacent a biasing magnet, whose field strength and orientation are sufficient to hold the reed switch actuated but insufficient to independently actuate the switch. A LATCH magnet and a RELEASE magnet are separately mounted on a pair of reciprocating key stems, the former with magnetic poles opposing, the latter with

magnetic poles assisting, the field associated with the biasing magnet. Movement of the LATCH magnet into proximity with the biasing magnet concentrates the field associated with the latter in the switch, closing the switch, which is subsequently held actuated by the latter. Movement of the RELEASE magnet into proximity with the biasing magnet reduces the field associated with the latter in the switch, opening the switch.

3,639,870
ELECTROMAGNETIC DEVICES

Reginald B. G. Benson, 81 Cotes Road, Barrow-on-Soar, Leicestershire, England

Filed July 10, 1970, Ser. No. 53,916
Int. Cl. H01f 7/08
U.S. Cl. 335—257 2 Claims

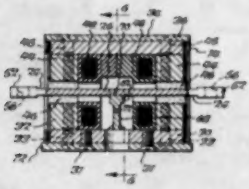


An electromagnetic device comprising a solenoid embedded within a moulded body and an associated armature. The device is adapted to be attached to a valve or other part which is to be actuated by the armature and incorporates a resilient means at its end adjacent the said part. Moreover, for attaching the device there is provided a surrounding and relatively slidable member adapted to be connected to the valve or other part and having internal shoulders coacting with complementary shoulders formed on the body.

3,639,871
TORQUE MOTOR

Nicholas D. Trbovich, West Seneca; William H. Meyer, East Aurora, and Paul R. Bauer, Akron, all of N.Y., assignors to Servotronics, Inc., Buffalo, N.Y., by said Meyer and Bauer

Filed May 21, 1970, Ser. No. 39,446
Int. Cl. H01f 7/08, 7/13
U.S. Cl. 335—274 10 Claims

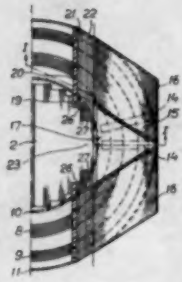


A torque motor having a housing and an armature mounted in the housing. The armature is supported for oscillatory movement on an upright, solid armature mounting member anchored at its lower end to the bottom shunt of the motor and carrying the armature at its upper end. The mechanical spring rate of the spring member can be adjusted by removing material from the web of the spring member, and this locates the armature pivot point.

3,639,872
MEANS FOR CONTROLLING THE LEAKAGE FLUX IN TRANSFORMERS

Petter Hessen, and Ruudi Siirak, both of Ludvika, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Continuation of application Ser. No. 866,881, Oct. 10, 1969, now abandoned, Continuation-in-part of application Ser. No. 827,877, May 26, 1969, now abandoned. This application Dec. 31, 1970, Ser. No. 103,302
Int. Cl. H01f 27/24
U.S. Cl. 336—84 2 Claims

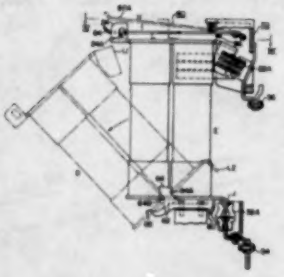


In transformers for high power amounts, for collecting the leakage flux and leading it back to the iron core, plates of laminated magnetic material are arranged close to the ends of the winding coils and at least one end of the plates is in magnetic connection with the core.

3,639,873
POWER FUSE APPARATUS

Alfred W. Hodgson, Orchard Park, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

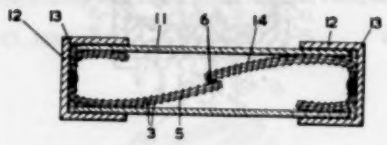
Filed Apr. 21, 1970, Ser. No. 30,515
Int. Cl. H01h 85/02
U.S. Cl. 337—187 10 Claims



The invention relates to a power fuse assembly including a power fuse device having end ferrules and stab-type electrical contacts extending rearwardly from the end surfaces of the ferrules for electrically engaging stab-jaw connectors without protruding laterally beyond the lateral dimension of

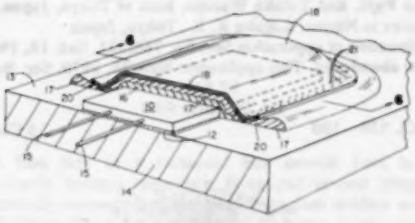
the power fuse device. This electrical interconnect design permits compact lateral packaging of a plurality of power fuse assemblies in multiphase electrical systems.

3,639,874
FUSES
Gerardus Jacobus Deelman, Eindhoven, Netherlands, assignor to Olvis Smeltzekeringenfabriek N.V., Utrecht, Netherlands
Filed Nov. 24, 1969, Ser. No. 879,442
Int. Cl. H01h 85/08, 85/36
U.S. Cl. 337—185 2 Claims



A fuse in which two current conductors are connected by fusible pellet, the connection between the current conductors being broken by mechanical spring action at the exceeding of a current threshold for which the pellet melts. One or each current conductor is combined and attached to an associated biased resilient element, thus forming an interruption element with both excellent mechanical and electrical characteristics for providing the wanted interruption action.

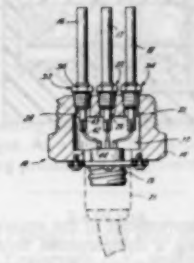
3,639,875
STRAIN GAGE ASSEMBLY AND METHOD OF ATTACHMENT
Given A. Brewer, Marion, Mass., assignor to Brewer Engineering Laboratories, Inc., Marion, Mass.
Filed Aug. 24, 1970, Ser. No. 66,484
Int. Cl. H01c 9/06
U.S. Cl. 338—2 8 Claims



A strain-deformable wire resistance strain gage is cemented to a ship propeller, and covered with a settable plastic protective layer in unset state; a sheet metal overlay is spot-welded through the plastic to the propeller, after which the plastic is cured, forming a seal around the welds.

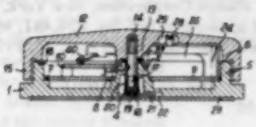
3,639,876
PROBE BODY FOR CORROSION TESTS
Homer M. Wilson, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.
Original application Oct. 3, 1968, Ser. No. 764,884, now Patent No. 3,558,462. Divided and this application July 28, 1970, Ser. No. 58,891
Int. Cl. B01k 3/00; H01c 7/00
U.S. Cl. 338—13 10 Claims

A metallic probe body formed of a pipe plug with an upper cylindrical cavity intersected by lower passageways carrying insulating members. Metallic terminal pins extend through these members for mounting field-replaceable electrodes in a side-by-side relationship. An electrical fitting is secured to the top portion of the plug for enclosing the cavity. Electrically conductive means in the cavity interconnect the electrical fitting and the pins. The conductive means are insulated



from one another and the probe body. The probe body may be readily installed in any piping system carrying corrosive fluids without introducing any weakness into such piping. The pipe plug subcomponent of the probe body can be manufactured by available pipefitting techniques.

3,639,877
VARIABLE-RESISTANCE FOOT CONTROL DEVICE, FOR REGULATING THE SPEED OF AN ELECTRIC MOTOR
Marcel Fresard, Petit-Lancy, Geneva, and Jean-Charles Donnat, Chatelaine, Geneva, both of Switzerland, assignors to Mefina S.A., Fribourg, Switzerland
Filed May 7, 1970, Ser. No. 35,348
Claims priority, application Switzerland, May 14, 1969, 7329/69
Int. Cl. H01c 9/02, 5/02
U.S. Cl. 338—153 4 Claims



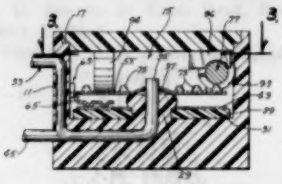
A variable-resistance foot control device for regulating the speed of an electric motor is particularly useful for sewing machines. It has a casing containing the variable-resistance element and a speed selection slider. The actuating member comprises a cover which pivots on a vertical axle against the action of a return spring which is fixed between the casing and said axle. The casing has a peripheral collar which the skirt of the cover surrounds and an annular support surface provided on the inside of the cover faces the collar. The slider is carried by a hinged lever actuated by turning the foot on the cover, whereby a pin and groove mechanism pivots the lever and moves the slider into contact with the contact points on the variable-resistance element.

3,639,878

ADJUSTABLE POTENTIOMETER WITH CONTACTOR RATCHET AND CENTRAL POST-SECURING MEANS FOR BASEPLATE

Louis W. Scheel, Columbus, Nebr., assignor to Dale Electronics, Inc., Columbus, Nebr.

Filed Dec. 18, 1969, Ser. No. 886,289
Int. Cl. H01c 9/02
U.S. Cl. 338—174 1 Claim



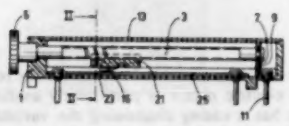
An adjustable potentiometer of the square-trim-type comprising a case having a compartment formed therein and which is closed by a cover extending thereover. An arcuate resistance element is positioned in the case compartment and has a central post extending upwardly therethrough from the bottom of the case. A circular electrical collector means is operatively rotatably mounted on the post and has a wiper element thereon which is in movable electrical contact with the resistance element. A first lead extends into the potentiometer case and extends upwardly through the post. The collector is rotatably mounted on the upper end of the first lead and includes means for preventing the upward movement of the collector with respect to the resistance element. The collector has spaced-apart teeth which are in threadable engagement with an elongated lead screw rotatably extending into the case. The collector is of flexible construction to permit the deflection or ratcheting of the threads with respect to the threads of the lead screw when the wiper reaches the limits of its travel to prevent damage to the unit. Second and third leads extend into the case and are operatively connected to the ends of the resistance element.

3,639,879

POTENTIOMETER COMPRISING A TRANSPORT SCREW

Jan Van Rooijen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of application Ser. No. 824,481, May 14, 1969, now abandoned. This application Aug. 24, 1970, Ser. No. 66,652
Int. Cl. H01c 9/02
U.S. Cl. 338—180 6 Claims



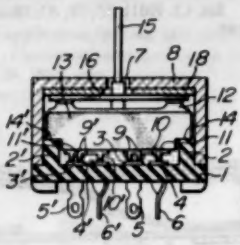
Potentiometer including a transport screw for the linear displacement of an insulating contact member, and a hairpin-like contact spring which engages the screw, the contact member and a resistance track respectively.

3,639,880

SLIDING-TYPE VARIABLE RESISTOR

Shunzo Oka, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sept. 17, 1970, Ser. No. 73,012
Claims priority, application Japan, Sept. 27, 1969, 44/92322; 44/92323; June 5, 1970, 45/55883; June 12, 1970, 45/58704
Int. Cl. H01c 9/02
U.S. Cl. 338—183 5 Claims



A sliding-type variable resistor comprising a baseplate with resistance elements and conductive elements disposed on the upper side thereof; a sliding block with contactors disposed on the lower side thereof and with a plate spring and an operating means provided on the upper side thereof, the contactors being maintained in contact with the resistance elements and the conductive elements; a housing which covers the baseplate in such a manner as to contain therein the sliding block; an operating means having a thumb fitting attached to the sliding block and being projected through the slot on the upper side of the housing; and a friction plate disposed on the upper surface of the sliding block and pressed against the ceiling of the housing by means of the plate spring, a gaseous grease layer being interposed between the ceiling of the ceiling of the housing and the friction plate so that a smooth sliding operation may be assured.

3,639,881

ROTARY VARIABLE RESISTOR WITH OBLIQUE TAPS AND BRUSH SPANNING PLURAL TAPS

Tatsuo Fujii, and Yutaka Watano, both of Tokyo, Japan, assignors to Nippon Kogaku K. K., Tokyo, Japan

Continuation of application Ser. No. 768,721, Oct. 18, 1968, now abandoned. This application Nov. 25, 1970, Ser. No. 92,848
Int. Cl. H01c 9/04
U.S. Cl. 338—190 3 Claims

A variable resistance element is provided in which a multicontact brush is slidable over a plurality of spaced tap terminals of a resistance element. The resistance element in-

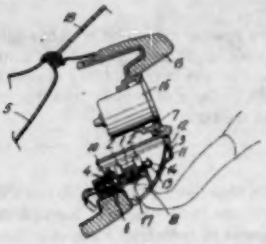
cludes a resistance film deposited on a suitable backing and a deposited conductive film in spaced strip form forming extending tap terminals for the resistance film. The brush contacts are aligned transversely to the path of travel of the brush while the tap terminals are angularly disposed relative to the path of brush travel so that at least two tap terminals are engaged by the brush contacts as the contact brush is moved relative to the tap terminals.

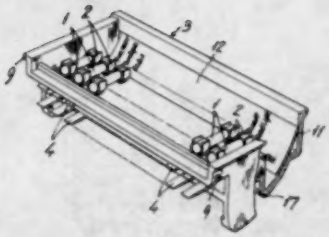
3,639,882

FUSE BOX APPARATUS FOR A MOTORCAR

Soichiro Honda, and Hiroyuki Shimojima, both of Tokyo, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 17, 1970, Ser. No. 29,609
Claims priority, application Japan, Apr. 28, 1969, 44/38130
Int. Cl. H01r *33/00*
U.S. Cl. 339—10 **8 Claims**





A fuse box in a motorcar has several fuse holders removably holding respective fuses and several plugs are electrically connected to the respective fuse holders and extend externally of the fuse box for engaging in plug sockets for respective electric circuits. The plug sockets are mounted in the car body so that the fuse box is removably engaged in a compartment of the body by insertion of the plugs in the plug sockets.

3,639,883

GROUND CONTACT FOR RECEPTACLE

William Drapkin, Centereach, N.Y., assignor to Slater Electric Inc., Glen Cove, N.Y.

Filed Sept. 21, 1970, Ser. No. 73,744
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 R **3 Claims**

A ground contact for use with an electrical receptacle comprises an integral metal stamping having two generally U-shaped bridges interconnected by two connecting portions at their open ends, and two leaf springs extending from respective connecting portions into a prong-receiving opening of the receptacle mounting strap. When a grounding prong is inserted into this opening, it forces the leaf springs against

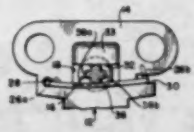
edges of the mounting strap so that the springs can be flexed against these edges. As a result, the flexed leaf springs apply substantial holding pressure to the grounding prong.

3,639,884

GROUNDING CONNECTION FOR WIRING DEVICE

William Drapkin, Centereach, N.Y., assignor to Slater Electric Inc., Glen Cove, N.Y.

Filed Oct. 16, 1970, Ser. No. 81,452
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 R **5 Claims**



A grounding connection for a wiring device includes a mounting strap having a screw-receiving aperture by which the strap is secured to an outlet box and a single spring wire extending across the aperture and adapted to exert pressure on the shank of a screw inserted between an edge of the aperture and the wire. The ends of the wire are restrained from movement in a direction opposing the force applied to the wire by the screw shank, but at least one end of the wire is capable of lateral movement with respect to the screw so that bowing of the wire is possible.

3,639,885

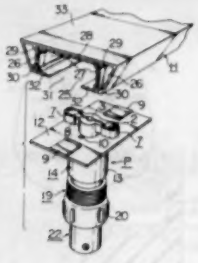
DISTRIBUTION DEVICE

Yoshio Yoshiya; Yoshiyuki Ishida, and Masamichi Ito, all of Kodoma, Japan, assignors to Matsushita Denko Kabushiki Kaisha, Osaka, Japan

Filed Nov. 5, 1969, Ser. No. 874,128
Claims priority, application Japan, Nov. 11, 1968, 43/98274
Int. Cl. H01r *9/12*
U.S. Cl. 339—21 R **3 Claims**

A distribution device for distributing electric power comprising a duct including a pair of opposing conductors respectively extending over the length of the duct and connected to an electric source, and a plug detachably mounted to the duct for transmitting the power from the conductors through a pair of contactors of the plug to an associated equipment. Each of the contactors of the plug as inserted

between the opposing conductors of the duct is resiliently pressed to each of the conductors in opposite direction to each other when mounted. The plug has a means to



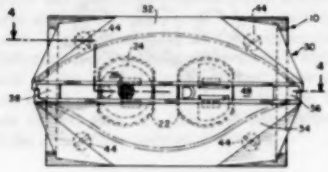
resiliently clamp its body to the duct, for allowing the plug to be moved along the duct while keeping the contactors in their resilient contacting position with the conductors.

3,639,886

WEATHERPROOF ELECTRICAL OUTLET BOX AND RECEPTACLE

William Drapkin, Centereach, N.Y., assignor to Slater Electric Inc., Glen Cove, N.Y.

Filed Nov. 4, 1970, Ser. No. 86,813
Int. Cl. H01r *13/44*
U.S. Cl. 339—36 **6 Claims**



A weatherproof outlet box in which an electrical receptacle can be mounted includes a plastic hood secured to the outlet box and enveloping the receptacle. The hood includes top, bottom and side panels, with the side panels diverging outwardly and the top and bottom panels converging. The hood is made of a pliable material so that when pressure is applied to the side panels, the narrow elongated slot in the forward end of the hood is caused to open so that a plug can be inserted into the receptacle.

3,639,887

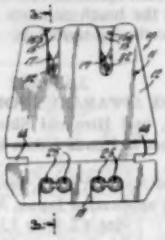
LAMPHOLDER FOR FLUORESCENT LAMPS

George E. Johnson, Bronxville, and Walter Newman, Forest Hills, both of N.Y., assignors to Leviton Manufacturing Co., Inc., Brooklyn, N.Y.

Filed Jan. 29, 1970, Ser. No. 6,789
Int. Cl. H01r *33/08*
U.S. Cl. 339—53 **4 Claims**

This invention relates to a push-in type of lampholder for a bi-pin type of fluorescent lamp and the contacts employed therein.

The lampholder has a hollow housing of insulating material in which a pair of pin-engaging contacts are mounted in spaced relation to each other. The contacts are formed of thin sheet material such as brass and each has a pair of lamp pin engaging fingers formed at one end thereof by a slit extending lengthwise of the contact and through a leg or base



portion of the contact extending at right angles to the fingers.

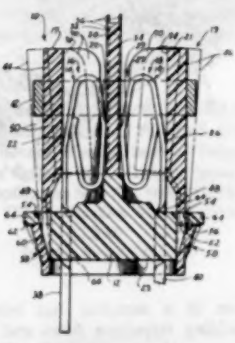
Said lamp pin engaging fingers of the contacts are aligned with open ended slots in the housing in position for reception of a lamp pin in the slits between the fingers with a straight movement of the lamp.

3,639,888

PRINTED CIRCUIT BOARD CONNECTOR

Robert B. Pittman, and Walter P. Kern, both of River Edge, N.J., assignors to Industrial Electronic Hardware Corporation, New York, N.Y., by said Pittman

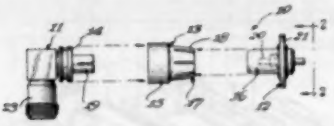
Filed Jan. 15, 1970, Ser. No. 3,036
Int. Cl. H01r *13/54*
U.S. Cl. 339—75 MP **12 Claims**



A printed circuit board connector comprises a base and a series of contacts mounted on the base and exposed at their front sections. Structure is operatively connected to the base opposing and spaced from the contact front sections so as to define therebetween a space for receiving a printed circuit board. A backing member is articulately mounted on the base and located immediately behind the back section of the contacts. This backing member is movable between a first position in which it engages the contacts and presses them toward the opposing structure and a second position more remote from the opposing structure than the first position. As a result of this movement of the backing member, the contacts exert a greater or lesser force on a printed circuit board which is located in the space, depending upon whether the backing member is in its first or second position respectively. The backing member, which is in the preferred embodiment

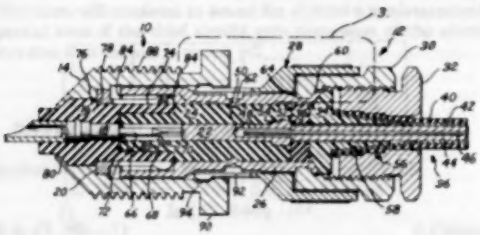
releasably engaged with the base, may be slidably or flexibly moved between the first and second positions.

3,639,889
ELECTRICAL CONNECTOR
George Komadina, 1428 Clark, De Kalb, Ill.
Filed Aug. 8, 1969, Ser. No. 848,576
Int. Cl. H01r *13/54, 17/06*
U.S. Cl. 339—75 R **5 Claims**



An electrical connector structure adapted for quick connection while yet maintaining the impedance characteristics of a transmission means, such as a transmission line. The connector may be arranged for use with coaxial electrical coupling elements permitting a plurality of simultaneous connections to be made as between components of an apparatus. The connector structure includes a tubular member providing releasable retained association of the electrical coupling elements for facilitated connection and disconnection.

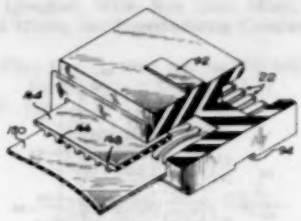
3,639,890
LOCKING CONNECTOR ASSEMBLY
William P. Stevens; George M. Hubbard, and William D. Wagner, all of Franklin, Ind., assignors to The Bendix Corporation
Filed June 9, 1970, Ser. No. 1,662
Int. Cl. H01r *13/54*
U.S. Cl. 339—91 R **1 Claim**



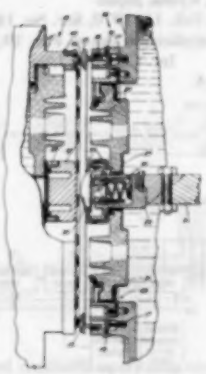
An electrical connector assembly for use between a cable and stationary device, the improvement being in the locking mechanism of the connectors.

3,639,891
TERMINATION OF FLAT CABLES
John W. Anhalt, La Crescenta, and James W. Maston, Altadena, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Dec. 15, 1969, Ser. No. 885,033
Int. Cl. H01r *9/08*
U.S. Cl. 339—99 R **6 Claims**

An electrical connector member for use with insulated flat cable having a housing member with a bore extending therethrough. A plurality of contact spring members are mounted in the bore, each of said spring members terminating in a piercing surface. An actuating plate is adapted to be inserted in the bore and cause the spring member piercing surfaces to pierce the insulation of the flat cable and thus make contact with conductors in the flat cable. The actuating plate may be formed of rib members with each rib member being associated with one of the spring members. Further, the spring members may be mounted in the bore in an unstressed condition prior to insertion of the actuating plate. Moreover, the spring members may be in the form of semieliptical beam, with the end thereof having a pair of piercing surfaces formed thereon.



3,639,892
HIGH-VOLTAGE CONNECTOR
William E. Dill, Natick; Maurice G. La Vault, Ashland; Stanley L. Kokoszka, Framingham, and William W. Shrader, West Newton, all of Mass., assignors to Raytheon Company, Lexington, Mass.
Filed May 18, 1970, Ser. No. 38,161
Int. Cl. H01r *17/14, 13/46*
U.S. Cl. 339—143 C **4 Claims**



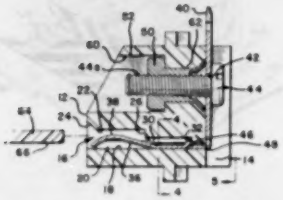
A high-voltage power connector, and method of manufacture thereof, for use with plug-in modules, each section of the contemplated connector consisting of at least one central conductor and a shielding member coaxially disposed about the at least one central conductor and held in position by a dielectric disc which is so shaped as to eliminated areas of excessive electrical stress, the free ends of each conductor and shielding member being movable orthogonally to the dielectric disc so that when the modules are in their operating positions a shielded power connection is formed.

3,639,893

PRINTED CIRCUIT BOARD EDGE CONNECTOR

John Philip Kunkle, and William Vito Pauza, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 31, 1969, Ser. No. 889,427
Int. Cl. H05k 1/07; H01r 13/64
U.S. Cl. 339—184 M 6 Claims



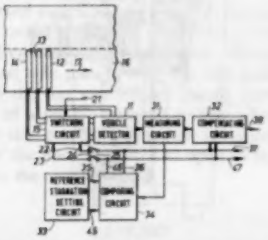
The disclosure relates to a one-piece molded housing having terminals located therein in a cavity for making electrical contact with a printed circuit board and the like. At one end of the terminal are circuit engaging fingers for engaging a circuit on a printed circuit board, and at the other end is a hole for receiving a screw which secures the terminal end to the housing in conjunction with a nut; the screw receiving under its head the bared end of wire conductor. This end of the terminal may also have extending therefrom a tab portion for mating engagement with a receptacle terminated wire conductor.

3,639,894

APPARATUS FOR DETECTING TRAFFIC INFORMATION

Ryohei Tanaka, Kyoto, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Feb. 11, 1970, Ser. No. 10,404
Claims priority, application Japan, Feb. 19, 1969, 44/12386
Int. Cl. G08g 1/08
U.S. Cl. 340—31 A 12 Claims



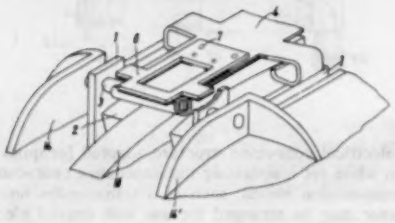
An apparatus for detecting traffic information on a street, which includes a vehicle detector provided with a plurality of vehicle-detecting elements having their respective predetermined detection areas on the street. One of the detecting elements is always operatively connected to the detector to provide for the detector a detection area extending a minimum distance or length along the street in the direction in which vehicles run, for measurement of traffic information under the normal traffic condition; while the other detecting elements are selectively and additionally connected to the detector to increase the distance of the detection area of the detector for measurement under stagnated traffic conditions.

3,639,895

VEHICLE BRAKE LINING WEAR WARNING DEVICE

Heiner Wilhelmi, Hamburg, Germany, assignor to Jurid Werke GmbH, Reinbek, Postfach, Germany

Filed June 2, 1970, Ser. No. 42,718
Claims priority, application Germany, June 3, 1969, P 19 28 215.6
Int. Cl. G08b 21/00
U.S. Cl. 340—52 A 6 Claims



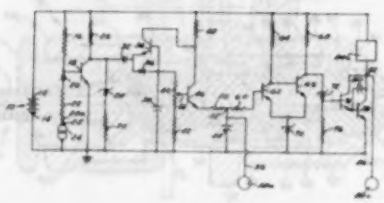
A signal generating means in an electric circuit cooperates with the friction linings of an automotive vehicle warning signal in case that the wear of the friction linings has reached a minimum limit.

3,639,896

VEHICLE SPEED RESPONSIVE WARNING ACTUATING SYSTEM

Michael Bozoian, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 4, 1970, Ser. No. 34,266
Int. Cl. B60q 1/00
U.S. Cl. 340—62 6 Claims



Electronic control circuitry responds to vehicle speed to actuate sequentially a plurality of warning lamps when vehicle speed reaches predetermined values. Actuation of each warning lamp automatically extinguishes its preceding lamp. Other devices also can be operated by the system, which attains extremely high accuracy from conventional electrical components.

3,639,897

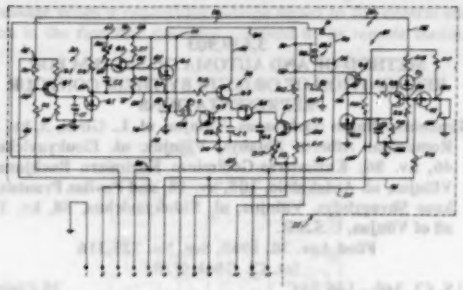
VEHICLE HOLDUP AND THEFT ALARM

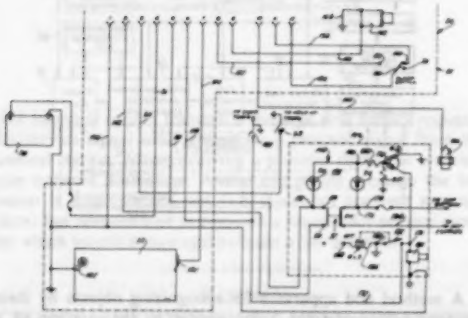
Rudor M. Teich, New York, N.Y., assignor to Babaco Research, Inc., North Arlington, N.J.

Filed June 11, 1969, Ser. No. 832,363
Int. Cl. B60d 25/04; B60r 25/10
U.S. Cl. 340—64 9 Claims

An alarm system for a vehicle provides both theft and holdup prevention. When the vehicle is unattended any

unauthorized attempt to open the cargo doors or to move the vehicle causes an alarm to be sounded and the motor to stall. An attempt at a holdup in which the cab door is opened while the driver is within the cab causes an alarm to sound





and the motor to stall after a predetermined period of delay. The siren will continue to sound for at least a predetermined period even if the thief should gain possession of the alarm key and turn the alarm circuit off.

3,639,898

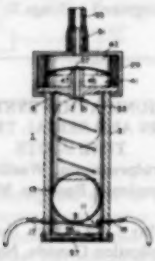
DIFFERENTIAL PRESSURE CONTROL SYSTEM AND SWITCH MEANS THEREFOR

Robert G. Booth, 6661 Banning Drive, Oakland, Calif.

Filed Apr. 2, 1969, Ser. No. 812,668

Int. Cl. B60q *1/44*

U.S. Cl. 340—71 **6 Claims**



A signal system adapted to anticipate application of brakes in an automotive vehicle, utilizes a vacuum operable switch assembly coupled into the intake manifold and designed to respond to vacuum in said intake manifold above a threshold value representative of an emergency condition, as brought on by rapid removal of one's foot from the gas feed pedal.

3,639,899

PROGRAMMED TRAFFIC SIGNAL AND METHOD OF USING

Gunnar R. Ljungkull, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed June 11, 1969, Ser. No. 832,300

Int. Cl. F21q *3/02*; F21v *13/14*

U.S. Cl. 340—110 **12 Claims**

A signal or display device comprising a condensing lens, aperture means having all aperture-defining edges located substantially at the focus of the lens, and a light source for providing diffuse illumination to the lens from the focus and from the entire aperture, contains a moveable filter member for interposing between source and lens and located substantially at said focus.

3,639,900

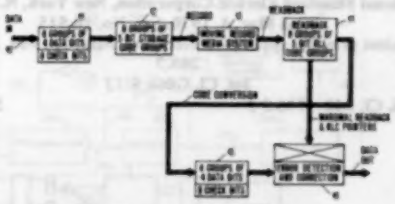
ENHANCED ERROR DETECTION AND CORRECTION FOR DATA SYSTEMS

Harry Carl Hinz, Jr., Arvada, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 27, 1970, Ser. No. 40,836

Int. Cl. G06k *5/00*; G11b *27/36*

U.S. Cl. 340—146.1 **16 Claims**



Quality of record readback operations on a real time basis is used as pointers to possible error conditions. The pointers are combined with error detecting and correcting coding schemes, preferably of the residue type, for detecting and correcting large numbers of errors in a group of data bits. The data and check bits are preferably organized in a geometric array in a self-clocking record system of the magnetic media type, the data within check bits are uncoded run-length-limited code. During readback, the run-length-limited code is first converted to data and check bits, then error detection and correction is effected using the pointers. Validity of the run-length-limited code is used as an additional pointer. Examples of marginal operation pointers are excessive phase shift in the readback signal, undesired amplitude

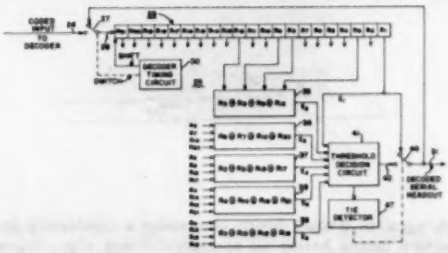
deviations in the readback signal, undesired velocity variations in the record system and incorrect wavelengths.

3,639,901

ERROR CORRECTING DECODER UTILIZING ESTIMATOR FUNCTIONS AND DECISION CIRCUIT FOR BIT-BY-BIT DECODING

Michael E. Mitchell, Syracuse, N.Y., assignor to General Electric Company

Filed June 10, 1969, Ser. No. 831,860
Int. Cl. H04l 1/10; H03k 19/42
U.S. Cl. 340—146.1 **5 Claims**



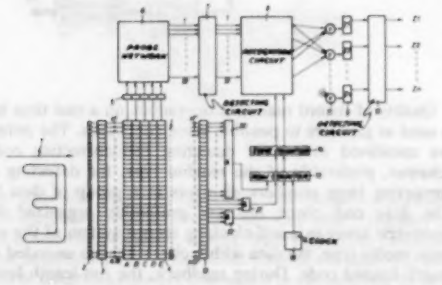
An error-correcting decoder circuit is disclosed, for decoding redundantly coded digital signals. The disclosed circuit includes a plurality of modulo 2 adders for generating estimator function bits from selected bits of a received code word, and a decision circuit that generates an output bit in accordance with the majority of the estimator functions if a majority decision is possible, and which substitutes the appropriate received bit in place of the undefined majority decision output that arises in the event of a "tie" between the estimator functions (i.e., when half of the estimator functions are "1" and the other half are "0").

3,639,902

CHARACTER RECOGNITION USING SHAPE DETECTION

Walter Dietrich, Breslauerstr, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 4, 1970, Ser. No. 16,515
Claims priority, application Germany, Mar. 5, 1969, P 19 11 269.7
Int. Cl. G06k 9/13
U.S. Cl. 340—146.3 J **5 Claims**



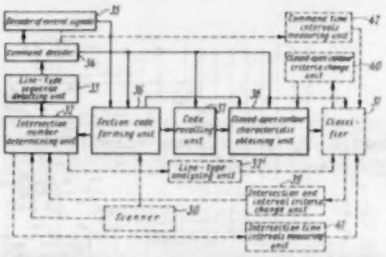
The arrangement according to the disclosure provides, in addition to the actual recognition, that there is detected a distinction in identical zones with respect to similar characters appearing in those zones. The result of this added discrimination serves to increase the recognition reliability of the character detected and to reduce the possibility of errors in the case of similar characters.

3,639,903

METHOD OF AND AUTOMATIC SYSTEM FOR RECOGNITION OF OBJECTS BY THEIR CONTOUR REPRESENTATIONS

Rimantas Alfonso Nashljunas, Vilinjus, ul. L. Giros, 3, kv. 2; Romualdas Alberto Zhlabys, Vilinjus, ul. Eisukyavichus, 46, kv. 86; Kazimieras-Gediminas Kazimiero Buchjunas, Vilinjus, ul. Antakalnio, 105, kv. 18, and Povilas Prantsishkaus Shvagzhdys, Vilinjus, ul. Eidukyavichus, 38, kv. 14, all of Vilnjus, U.S.S.R.

Filed Apr. 30, 1968, Ser. No. 725,316
Int. Cl. G06k 9/10
U.S. Cl. 340—146.3AC **25 Claims**



A method and apparatus for recognizing objects by their contour representations being similar to the contour of a reference object. The method and apparatus includes dividing the contour representation into scanning lines, coding the lines into code line digits, determining the number of intersections of the background and contour in each line, determining transitions from lines with one number of intersections to lines with another number of intersections, automatically fixing lines at the places of transitions, dividing the contour representation by the fixed lines into sections, forming section codes of the sections from present digits of respective section line codes, detecting in the section line code being obtained code portions confined between the code digits corresponding to the intersections in at least one of the fixed lines defining the boundaries of the sections, determining closed-open contour characteristics of the contour portions between intersections in the fixed lines by the character of the code portions, and determining by the obtained closed-open contour characteristics of the contour portions whether the object being recognized belongs to one of the reference objects.

3,639,904

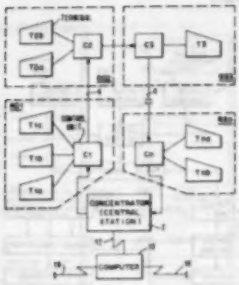
DATA COMMUNICATION SYSTEM OF LOOP CONFIGURATION AND SERIAL TRANSMISSION OF TIME SLOTS

Jeganandaraj A. Arulpragasam, Westhill, Ontario, Canada, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 5, 1970, Ser. No. 34,778
Claims priority, application Canada, Nov. 10, 1969, 067,036
Int. Cl. H04q 9/00
U.S. Cl. 340—147 R **18 Claims**

In a data communication system a plurality of remote stations and a central station are arranged in a series loop. The

central station transmits a succession of time slots to the loop and information is transferred between the central station and the remote stations with character interleaving under control of the central station. Each remote station includes one or more terminals. A terminal wishing to transmit a message sends a request-for-service signal to the central station in the first free time slot received by its remote station.



The terminal cannot transmit a message or a further request-for-service signal until it receives a proceed signal from the central station. After receiving a proceed signal the terminal can transmit a message. At the end of the message the terminal is again locked out (i.e. it cannot transmit message data) but remains free to transmit a request-for-service signal by which means it may again obtain a line position.

3,639,905

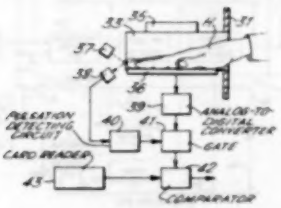
CREDIT CARD SYSTEM HAVING MEANS FOR SENSING IF OBJECT IS LIVING

Koichi Yaida, Osaka, and Shizuya Ano, Kyoto, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Nov. 27, 1970, Ser. No. 92,977

Int. Cl. H04q *3/00*

U.S. Cl. 340—149 **6 Claims**



A system for identifying the user of a credit card or the like, wherein a predetermined portion of the living body, such as a finger or a hand, of the user of a card is used for identification of the user. The system is provided with means for checking whether the object presented by the user of a card is the predetermined portion of the living body of the user so that any fraudulent use of an object simulating the portion of a human body can be prevented.

3,639,906

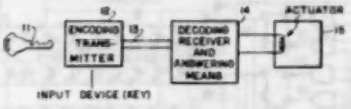
KEY IDENTIFICATION SYSTEM HAVING KEY CODE CONTROL

Peter R. Tritsch, 192 Marlboro St., Boston, Mass.

Filed Oct. 14, 1968, Ser. No. 767,209

Int. Cl. H04q *3/00*

U.S. Cl. 340—149 **9 Claims**



A type of ordinary key is inserted into an ordinary looking lock that provides a group of unique tone pairs characteristic of the code identified by the key. These groups of tone pairs are transmitted to a central processing unit. The central processing unit responds to the pairs of frequencies by transmitting appropriate control signals that unlock or refuse to unlock an appropriate lock or indicate that the key holder may or may not be entitled to credit.

3,639,907

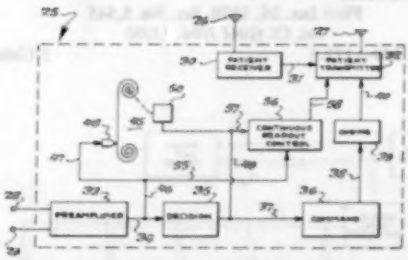
INTERROGATED TELEMETRY ALARM SYSTEM FOR PHYSIOLOGICAL MONITORING

Wilson Greatbatch, Clarence, N.Y., assignor to Mennen-Greatbatch Electronic, Inc., Clarence, N.Y.

Filed Sept. 2, 1969, Ser. No. 854,582

Int. Cl. H04q *9/00*

U.S. Cl. 340—150 **4 Claims**

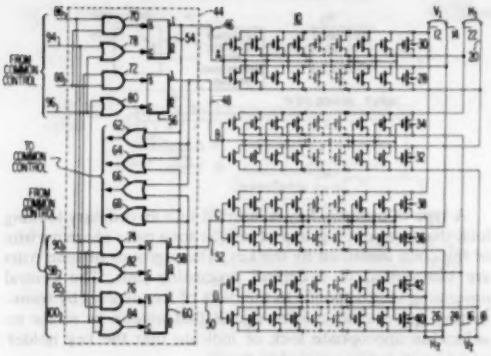


Apparatus for monitoring from a single station a physiological condition of each of a plurality of remotely located patients. A radio transmitter at the station generates sequentially a plurality of tone signals, one for each patient and each of a different frequency, on a common carrier. A radio receiver with each patient has a band pass corresponding to a particular one of the tone signals. Each receiver when addressed activates a radio transmitter with the patient for transmitting to a single receiver at the station a coded signal indicative of the physiological state of the patient, derived from signal generating means operatively connected to the patient. The signals received at the station are sequentially routed, decoded, and applied to suitable indicators.

3,639,908
SOLID-STATE ANALOG CROSS-POINT MATRIX HAVING BILATERAL CROSSPOINTS

Norman Hovagimyan, Cherry Hill, and Robert Neale Van Delft, Pennsauken, both of N.J., assignors to RCA Corporation

Filed Mar. 2, 1970, Ser. No. 15,396
Int. Cl. H04q 1/00, 3/00, 9/00
U.S. Cl. 340—166 7 Claims

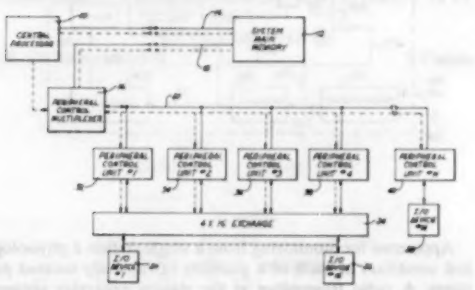


A solid-state switching matrix building block which utilizes bilateral devices to couple analog signals from an input terminal to desired output terminals. The building blocks, including associated logic circuits, are such that they may be built on a single P–MOS integrated circuit chip.

3,639,909
MULTICHANNEL INPUT/OUTPUT CONTROL WITH AUTOMATIC CHANNEL SELECTION

Erwin Arthur Hauck, Arcadia, and Jacob F. Vigil, Sierra Madre, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jan. 26, 1970, Ser. No. 5,545
Int. Cl. G06f 3/04, 13/00
U.S. Cl. 340—172.5 5 Claims

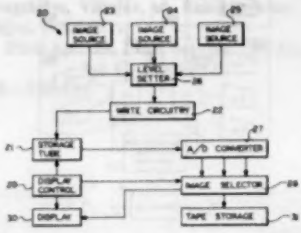


A multiplexed input/output system for controlling transfer of data between a large number of input/output units and a buffer memory on a time-shared basis over a small number of channels in which any one of several channels may be used to service any one of a number of input/output units through an input/output exchange. In response to the designation of a particular unit, special logic determines which of the several channels is to be used and establishes the proper connection between the selected channel and the designated input/output unit through the exchange.

3,639,910
MULTI-IMAGE AND SIGNAL STORAGE ON A STORAGE TUBE TARGET

Steven R. Hofstein, Princeton, N.J., assignor to Princeton Electronic Products, Inc., Princeton, N.J.

Filed Feb. 9, 1970, Ser. No. 9,699
Int. Cl. G06f 3/14
U.S. Cl. 340—172.5 8 Claims

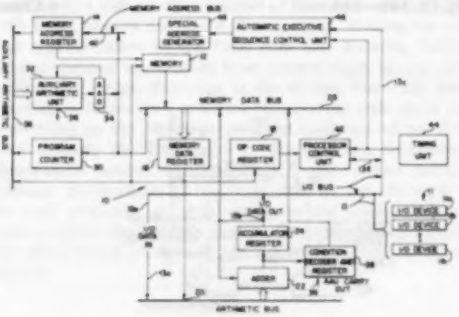


Method and apparatus for enabling simultaneous storage of multiple images and/or digital data on a storage tube target, and for selectively retrieving such information.

3,639,911
DIGITAL PROCESSOR HAVING AUTOMATIC CONFLICT-RESOLVING LOGIC

Neil G. Frieband, Framingham, and Douglas O. Kendrick, Northborough, both of Mass., assignors to Incoterm, Marlboro, Mass.

Filed June 10, 1970, Ser. No. 45,026
Int. Cl. G06f 9/18
U.S. Cl. 340—172.5 17 Claims



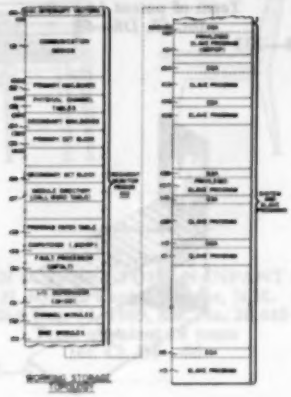
A digital data processor for transferring information with associated devices has an automatically operating executive, i.e. conflict-resolving, logic unit that resolves operating conflicts arising from the asynchronous operations of the processor and the associated devices when one calls for an information transfer with the other. The processor operates under control of the logic unit to store off interrupted status at and load in new status information from memory locations dedicated to this purpose and identified, at least in part, by the particular device with which the processor is operating.

3,639,912

MANAGEMENT CONTROL SUBSYSTEM FOR MULTIPROGRAMMED DATA PROCESSING SYSTEM

Donald J. Campbell, Phoenix, Ariz., assignor to Honeywell Information Systems Inc.

Filed Apr. 16, 1969, Ser. No. 816,624
Int. Cl. G05b 19/04
U.S. Cl. 340—172.5 4 Claims



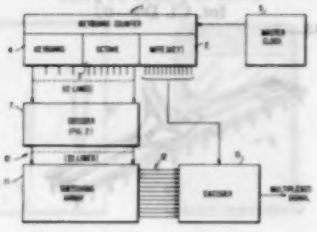
A management control subsystem for a multiprogrammed data-processing system, wherein a varying amount of working storage space is reserved for the use of the management control subsystem in providing management control services for the user programs, the amount of working storage space reserved corresponding to the number of user programs in execution.

3,639,913

METHOD AND APPARATUS FOR ADDRESSING A MEMORY AT SELECTIVELY CONTROLLED RATES

George A. Watson, Tustin, Calif., assignor to North American Rockwell Corporation

Filed Nov. 10, 1969, Ser. No. 875,178
Int. Cl. G06f 15/34
U.S. Cl. 340—172.5 12 Claims

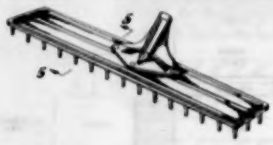


A memory contains digital data of related informational content in a plurality of discrete locations identified by respective addresses. The memory is addressed, or accessed, at a rate which depends upon the desired spacing between data from the various locations as it is sequentially read from the memory. In a specific embodiment, the data constitutes amplitude values of a complex waveform of the type produced by a musical instrument, at equally spaced points in time along an axis of the waveform. Apparatus for addressing the memory at any of a plurality of selectively controlled rates includes a calculator for continuously computing a set of numbers each defining a different spacing between the data during readout of the memory. When a desired rate of readout is selected, as by selecting a desired frequency of repetition of a complete cycle of the stored waveform, the number associated with that rate is sampled from the computed set and is periodically increased by its own value to identify appropriate data addresses in the memory, for accessing that data, at intervals of the periodic increase corresponding to the desired rate of readout.

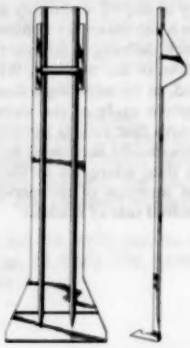
DESIGNS

FEBRUARY 1, 1972

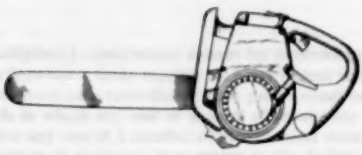
222,900
RAKE FOR SHAG RUGS
Mildred Derian, Redondo Beach, Calif., assignor to J. F. Kerns Industries, South El Monte, Calif.
Filed June 12, 1970, Ser. No. 23,456
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D4—3



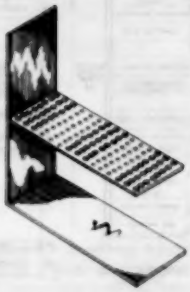
222,901
MATERIAL HANDLING HOOK
Jerome E. Meadows, 124 W. Kyle Place, Gadsden, Ala. 35901
Filed Mar. 13, 1970, Ser. No. 21,884
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14



222,902
CHAIN SAW
Richard W. Condon, Frankfort, Vernon L. Krabbe, Beecher, Henry R. Johannes, St. Anne, and Roscoe Combs, Kankakee, Ill., assignors to Roper Corporation, Kankakee, Ill.
Filed Nov. 16, 1970, Ser. No. 26,027
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—65



222,903
CARTON STACKING BRACKET FOR PALLETS OR THE LIKE
Robert Lee Griffith, 501 Russell St., Covington, Ky. 41011
Original design application Aug. 21, 1969, Ser. No. 18,794, now Patent No. 220,166, dated Mar. 16, 1971. Divided and this application July 15, 1970, Ser. No. 23,949
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—233



222,904
CARTON STACKING BRACKET FOR PALLETS OR THE LIKE
Robert Lee Griffith, 501 Russell St., Covington, Ky. 41011
Original design application Aug. 21, 1969, Ser. No. 18,794, now Patent No. 220,166, dated Mar. 16, 1971. Divided and this application July 15, 1970, Ser. No. 23,953
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—233

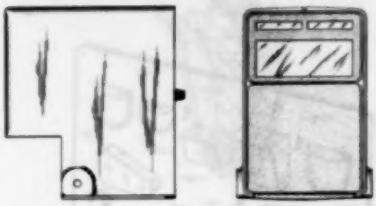
222,905
CLOSURE OR SIMILAR ARTICLE
Alfred W. Kinney, Kansas City, Mo., assignor to Phillips Petroleum Company
Filed Feb. 5, 1970, Ser. No. 21,290
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—267

222,906
CHAIR
Ivan L. Loesch, Huron, S. Dak., assignor to Spacer Furnishings Corporation, Huron, S. Dak.
Filed May 21, 1970, Ser. No. 23,079
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D15—1

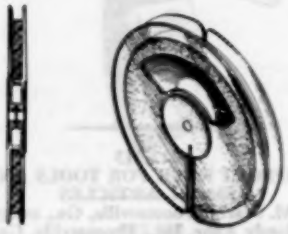
222,907
ROCKER SUPPORT FOR AN INFANT SEAT
William H. Rymes, Center Ossipee, N.H. 03814
Filed Dec. 10, 1969, Ser. No. 20,445
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D15—6

222,908
PENDULUM AMUSEMENT DEVICE
Robert J. Voth, San Diego, Calif., assignor to Ess'Tee Industries, San Diego, Calif.
Filed Aug. 21, 1970, Ser. No. 24,634
Term of patent 7 years
Int. Cl. D19—*08*
U.S. Cl. D25—1

222,909
HOUSING FOR A TACHOGRAPH
George R. Stehl, Stony Brook, and Daniel November, Kew Gardens, N.Y., assignors to Wagner Electric Corporation
Filed June 3, 1970, Ser. No. 23,262
Term of patent 14 years
Int. Cl. D10—*08*
U.S. Cl. D26—14

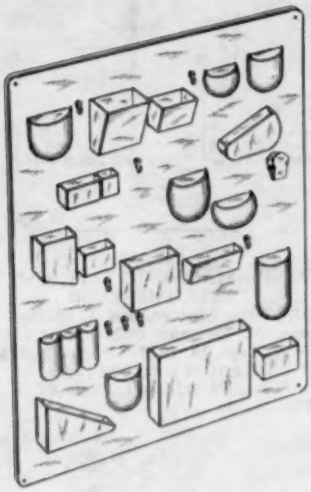


222,910
COMBINED MAGNETIC TAPE AND TAPE REEL THEREFOR
Reinhold M. Weiss, Chicago, and T. Michael Dennehey, La Grange, Ill., assignors to Memorex Corporation
Filed Sept. 14, 1970, Ser. No. 24,978
Term of patent 14 years
Int. Cl. D14—*01*; D16—*07*
U.S. Cl. D26—14



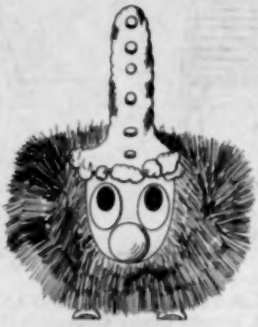
222,911
MAGNETIC TAPE CASSETTE
Reinhold M. Weiss, Chicago, and T. Michael Dennehey, La Grange, Ill., assignors to Memorex Corporation
Filed Sept. 14, 1970, Ser. No. 24,971
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14

222,912
WALL RACK FOR HOLDING HOUSEHOLD ARTICLES
Dorothee M. Maurer, Hafsburger Platz 2, Munich, Germany
Filed Apr. 22, 1970, Ser. No. 22,566
Claims priority, application Germany Oct. 30, 1969
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D33—3



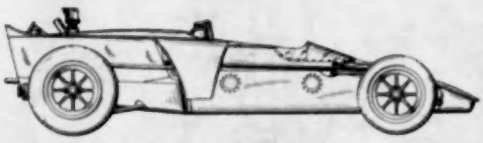
222,913
SUPPORT RACK FOR TOOLS AND SMALL ARTICLES
Anne M. Searcy, Thomasville, Ga., assignor to Handy Anne, Inc., Thomasville, Ga.
Filed June 25, 1970, Ser. No. 23,663
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D33—3

222,914
TOY FIGURE
Alan S. Reynolds, Bournemouth, England, assignor to Wonkie International Inc., Woonsocket, R.I.
Filed Aug. 14, 1970, Ser. No. 24,485
Claims priority, application Great Britain Feb. 17, 1971
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4



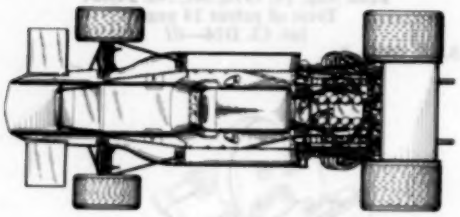
222,915
ROCKING AND SPINNING HOBBYHORSE
Leroy Alston, 1242 Hicks Blvd., Fairfield, Ohio 45014
Filed Sept. 11, 1970, Ser. No. 24,944
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15

222,916
MODEL RACING CAR
Josef Helmut Karasek, Lenggries, Germany, assignor to McNamara Racing K.G., Lenggries, Germany
Filed Sept. 18, 1970, Ser. No. 25,061
Claims priority, application Great Britain Mar. 22, 1970
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—15

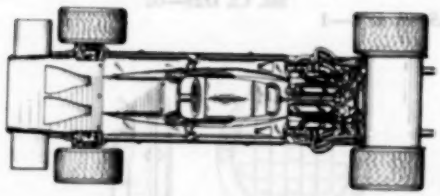


222,917
MODEL RACING CAR
Eric Harrison Broadley, Pangborne, near Reading, England, assignor to Lola Cars Limited, Slough, England
Filed Sept. 18, 1970, Ser. No. 25,062
Claims priority, application Great Britain Mar. 23, 1970; May 20, 1970
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—15

222,918
MODEL RACING CAR
Gianpaolo Dallara, Modena, Italy, assignor to Frank Williams (Racing Cars) Limited, Slough, England
Filed Oct. 1, 1970, Ser. No. 25,291
Claims priority, application Great Britain Apr. 7, 1970
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



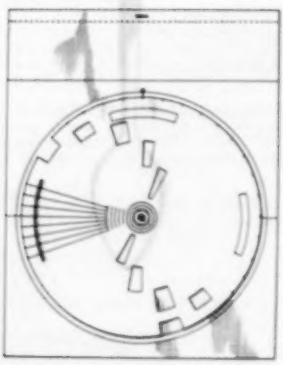
222,919
MODEL RACING CAR
Anthony Colin Bruce Chapman, Norfolk, England, assignor to Lotus Components Limited, Norwich, Norfolk, England
Filed Nov. 5, 1970, Ser. No. 25,847
Claims priority, application Great Britain May 9, 1970
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



222,920
LAMP
Walter Koziol, Russell, Ill., assignor to Beatrice Foods Co., Chicago, Ill.
Filed June 3, 1970, Ser. No. 23,272
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31

222,921
LITTER RECEPTACLE
Eleanor V. Kingsley, 490 Preciado St., Pomona, Calif. 91766
Filed Nov. 13, 1970, Ser. No. 25,949
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D49—35

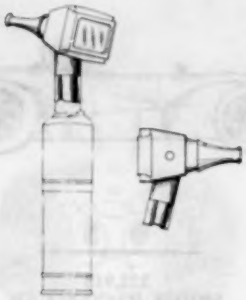
222,921
TV PROGRAM SELECTOR
Joseph A. Doumit, 109 N. Evangeline St., New Iberia, La. 70560
Filed Mar. 12, 1970, Ser. No. 21,874
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D52—6



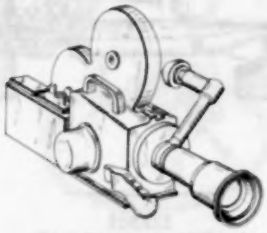
222,923
SPOON OR SIMILAR ARTICLE
Robert S. Conland, Vernon, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Apr. 24, 1970, Ser. No. 22,618
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12

222,924
SPOON OR SIMILAR ARTICLE
Frank R. Perry, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Apr. 27, 1970, Ser. No. 22,683
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12

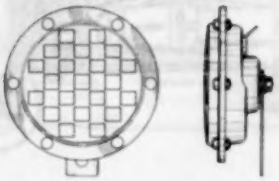
222,925
OTOSCOPE
Arthur J. Pulos, Fayetteville, N.Y., assignor to Welch Allyn, Inc., Skaneateles Falls, N.Y.
Filed Sept. 2, 1970, Ser. No. 24,793
Term of patent 14 years
Int. Cl. D24—*02;* D16—*08*
U.S. Cl. D57—1



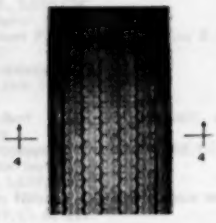
222,926
PORTABLE SHOULDER SUPPORTED MOTION PICTURE CAMERA
Herbert Sawasky, 31 Brewster Road W., West Massapequa, N.Y. 11758
Filed Aug. 14, 1970, Ser. No. 24,484
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1



222,927
HORN
Fusaaki Tsuhata, Fusocho, Japan, assignor to Imasen Electric Co., Ltd.
Filed Sept. 30, 1970, Ser. No. 25,282
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D72—1



222,928
TIRE
Gilbert Joseph Hoke, Kenmore, N.Y., assignor to Dunlop Tire and Rubber Corporation, Buffalo, N.Y.
Filed Jan. 30, 1970, Ser. No. 21,157
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—20



222,929
ELECTRIC DRY SHAVER
Maarten Willem van Lelyveld, Drachten, Netherlands, assignor to Carinthia Elektrogerate G.m.b.H.
Filed May 15, 1970, Ser. No. 23,010
Claims priority, application Austria Nov. 18, 1969
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3

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Spacer Furnishings Corp. : *See*—
Loesch, Ivan L. 222,906.

Stehl, George R., and D. November, to Wagner Electric Corp. Housing for a tachograph. 222,909, 2-1-72, Cl. D26—14.

Tsuhata, Fusaaki, to Imasen Electric Co., Ltd. Horn. 222,927, 2-1-72, Cl. D72—1.

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Welch Allyn, Inc. : *See*—
Pulos, Arthur J. 222,925.

Williams, Frank, (Racing Cars) Ltd. : *See*—
Dallara, Gianpaolo. 222,918.

Wonkie International Inc. : *See*—
Reynolds, Alan S. 222,914.

CLASSIFICATION OF PATENTS

ISSUED FEBRUARY 1, 1972

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
14N 3,638,240
88 3,638,241
105 3,638,239
237 3,638,242

CLASS 3
1 3,638,243

CLASS 4
17 3,638,244
172.19 3,638,245

CLASS 5
2R 3,638,246
11 3,638,247
105 3,638,248
159 3,638,249
327 3,638,250
334C 3,638,251
334 3,638,252
337 3,638,253
3,638,255
351 3,638,254

CLASS 8
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116.2 3,639,097
127.5 3,639,098

CLASS 9
1R 3,638,256
5 3,638,257
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CLASS 10
27 3,638,259
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CLASS 12
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8.3 3,638,263
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CLASS 15
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41R 3,638,266
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76 3,638,268
94 3,638,269
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230.11 3,638,271
230.19 3,638,272
235.4 3,638,273
250.41 3,638,274
304 3,638,275

CLASS 16
149 3,638,276
190 3,638,277

CLASS 19
159 3,638,278
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CLASS 23
112 3,639,099
202V 3,639,100
203R 3,639,101
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288S 3,639,103
365 3,639,104
366 3,639,105

CLASS 24
115 3,638,280
31B 3,638,281
67.3 3,638,282
73CF 3,638,284
73HR 3,638,283
108 3,638,285
201 3,638,286
230 3,638,287
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1.4 3,638,291

CLASS 29
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182 3,638,293
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196.2 3,639,107
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400 3,638,296
407 3,638,295
446 3,638,297
470.9 3,638,298
527.2 3,638,299
589 3,638,300
3,638,301
606 3,638,302
614 3,638,303
624 3,638,306
626 3,638,304
628R 3,638,305

CLASS 30
193 3,638,307
346.53 3,638,308

CLASS 32
2 3,638,309
14D 3,638,313
15 3,638,312
22 3,638,310
60 3,638,314
63 3,638,315
66 3,638,316

CLASS 33
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18R 3,638,319
49B 3,638,321
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81 3,638,322
162 3,638,323
174 3,638,324
182 3,638,326
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10 3,638,328
122 3,638,329
156 3,638,330
231 3,638,331

CLASS 35
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CLASS 36
4.5 3,638,333
44 3,638,336
67R 3,638,337

CLASS 37
65 3,638,338
98 3,638,339

CLASS 40
2 3,638,340
39 3,638,341
106.21 3,638,342
124.1 3,638,343

CLASS 42
71R 3,638,344

CLASS 43
8 3,638,345
17.1 3,638,346
42.39 3,638,347
75 3,638,348

CLASS 44
7E 3,639,108
62 3,638,349
66 3,639,109
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CLASS 46
23 3,638,352
47 3,638,350
92 3,638,353
117 3,638,351
132 3,638,354
179 3,638,355
221 3,638,356
240 3,638,357

CLASS 48
111 3,639,111

CLASS 49
248 3,638,360
325 3,638,358
479 3,638,361
490 3,638,359

CLASS 51
170MT 3,638,362
249 3,638,363
269 3,638,364
281 3,638,365
326 3,638,366
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CLASS 52
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16 3,638,369
36 3,638,370
91 3,638,371
92 3,638,373
97 3,638,372
100 3,638,374
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122 3,638,376
167 3,638,377
169 3,638,378
185 3,638,379
236 3,638,380
309 3,638,381
359 3,638,382
473 3,638,383
589 3,638,384
665 3,638,385
704 3,638,386
741 3,638,387
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123 3,638,392
180 3,638,393
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CLASS 55
16 3,638,396
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25 3,638,398
59 3,638,399
69 3,638,400
158 3,638,401
307 3,638,402
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CLASS 56
10.4 3,638,405
14.9 3,638,406
15.6 3,638,407
219 3,638,408
339 3,638,409

CLASS 57
34HS 3,638,410
3,638,411
52 3,638,412
77.45 3,638,413
93 3,638,414
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CLASS 58
23TF 3,638,416
26 3,638,417
57.5 3,638,418
109 3,638,419

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24 3,638,420
39.28 3,638,422
39.31 3,638,421
51 3,638,423
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54.5P 3,638,425
54.6P 3,638,426
3,638,427
226 3,638,428

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3,638,430
2 3,638,432
11 3,638,433
16 3,638,434
39 3,638,435
46.5 3,638,436
64 3,638,437
72.1 3,638,438
72.4 3,638,439

CLASS 62
3 3,638,440
6 3,638,441
49 3,638,442
52 3,638,443
81 3,638,444
184 3,638,445
202 3,638,446
222 3,638,447
233 3,638,448
272 3,638,449
329 3,638,450
344 3,638,451
485 3,638,452

CLASS 64
9R 3,638,453
14 3,638,454
23 3,638,455

CLASS 65
29 3,639,112
30 3,639,113
3,639,114

CLASS 66
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CLASS 68
12R 3,638,457
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200 3,638,459

CLASS 70
52 3,638,460
92 3,638,461
186 3,638,462

CLASS 71
92 3,639,115

CLASS 72
12 3,638,463
53 3,638,464
181 3,638,465
208 3,638,466
237 3,638,467
238 3,638,468
263 3,638,469
324 3,638,470
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391 3,638,472
448 3,638,473
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CLASS 73
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61.1R 3,638,476
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155 3,638,485
161 3,638,486
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3,638,489
212 3,638,490
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315 3,638,492
317 3,638,493
355R 3,638,494
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398R 3,638,496
3,638,497
422TC 3,638,498
422R 3,638,499
423 3,638,500
492 3,638,501

CLASS 74
5.34 3,638,502
18 3,638,503
25 3,638,504
54 3,638,505
230.17 3,638,506
424.8 3,638,507
426 3,638,508
436 3,638,509
3,638,510
440 3,638,511
595 3,638,512
820 3,638,513

CLASS 75
.5BB 3,639,116
49 3,639,117
121 3,639,118
157 3,639,119

CLASS 76
101B 3,638,514

CLASS 81
3.1R 3,638,515
9.51 3,638,517
3,638,518
43 3,638,516
177G 3,638,519

CLASS 82
24 3,638,520

CLASS 83
22 3,638,521
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CLASS 84
95 3,638,524
319 3,638,525

CLASS 89
43 3,638,526

CLASS 90
57 3,638,527

CLASS 91
6 3,638,528
50 3,638,529
172 3,638,530
189 3,638,531
220 3,638,532
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411R 3,638,535

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CLASS 93
51R 3,638,537
93DP 3,638,538

CLASS 94
44 3,638,539
46R 3,638,540

CLASS 95
4.5 3,638,541
10CE 3,638,543
10CT 3,638,542
3,638,544
11R 3,638,545
15 3,638,546
31R 3,638,547
42 3,638,548
44 3,638,549
53 3,638,550

CLASS 96
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3,639,121
1.8 3,639,122
28 3,639,123
29 3,639,124
35 3,639,125
95 3,639,126
101 3,639,127
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CLASS 98
2.16 3,638,551
2.18 3,638,552

CLASS 99
23 3,638,553
64 3,639,129
107 3,638,554
175 3,639,130
303 3,638,555
329 3,638,556
348 3,638,557
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CLASS 100
93PB 3,638,560
93P 3,638,559
118 3,638,562
215 3,638,561

CLASS 101
18 3,638,563
35 3,638,564
111 3,638,565
114 3,638,566
170 3,638,567
219 3,638,568

CLASS 102
22 3,638,569
24 3,638,570
41 3,638,571
75 3,638,572
90 3,638,573

CLASS 104
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3,638,575
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6 3,638,577
12 3,638,578

CLASS 105
26R 3,638,579
215C 3,638,580
3,638,581
218R 3,638,582

CLASS 106
2 3,639,131
39R 3,639,132
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CLASS 108
6 3,638,584
9 3,638,585
58 3,638,586
66 3,638,587
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CLASS 110
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7 3,638,590

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54 3,638,596
116FF 3,638,597

CLASS 114
16A 3,638,598
200 3,638,599
222 3,638,600
235B 3,638,601

CLASS 116
114 3,638,602
121 3,638,603

CLASS 117
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10 3,639,135
3,639,136
26 3,639,137
33.5CS 3,639,138
37R 3,639,139
46CB 3,639,140
47A 3,639,141
51 3,639,142
54 3,639,143
3,639,148
56 3,639,144
62 3,639,145
68 3,639,146
71R 3,639,639
73 3,639,147
76F 3,639,149
93 3,639,150
93.4 3,639,151
113 3,639,152
118 3,639,153
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3,639,155
139.5A 3,639,156
3,639,157
152 3,639,158
161C 3,639,160
161 3,639,159

202 3,639,161
215 3,639,162
217 3,639,163
222 3,639,164
224 3,639,640
227 3,639,165
234 3,639,166
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50.1 3,638,605
69 3,638,606
249 3,638,607
406 3,638,608
426 3,638,609
625 3,638,612
636 3,638,610
637 3,638,611
3,638,613
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CLASS 119

4 3,638,615
5 3,638,616
51 3,638,617
51.12 3,638,618

CLASS 122

13A 3,638,619
115 3,638,620
140R 3,638,621
182R 3,638,622

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45 3,638,623
90.18 3,638,624
117A 3,638,626
3,638,627
122H 3,638,625
139AF 3,638,629
139R 3,638,628
148D 3,638,630
179L 3,638,631
182 3,638,632

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CLASS 126

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3,638,635
110R 3,638,636
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197 3,638,638

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31 3,639,170
37 3,639,171

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2.1A 3,638,642
9 3,638,643
16 3,638,644
25B 3,638,645
33 3,638,646
133 3,638,647
202 3,638,648
214R 3,638,649
221 3,638,650
284 3,638,651
305 3,638,652
340 3,638,653
3,638,654
351 3,638,655
419P 3,638,656
422 3,638,657
535 3,638,658

CLASS 130

27W 3,638,659

CLASS 131

2 3,638,660
94 3,638,661
261B 3,638,662

CLASS 132

54 3,638,663
79C 3,638,664
129 3,638,665

CLASS 134

25R 3,639,172
57R 3,638,666

CLASS 135

5A 3,638,667
20R 3,638,668

CLASS 136

3 3,639,173
20 3,639,174
30 3,639,176
154 3,639,175

CLASS 137

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81.5 3,638,670
3,638,671
3,638,672
205 3,638,673
375 3,638,674
550 3,638,675
576 3,638,676
3,638,677
595 3,638,678
604 3,638,679
606 3,638,680
607 3,638,681
624.12 3,638,682
624.27 3,638,683

CLASS 138

97 3,638,684

CLASS 139

125 3,638,685
127R 3,638,686

CLASS 140

71 3,638,687

CLASS 141

98 3,638,688
214 3,638,689
354 3,638,690

CLASS 143

46F 3,638,691
168B 3,638,692

CLASS 144

3D 3,638,693
34A 3,638,694

CLASS 146

3R 3,638,695
6 3,638,696
83 3,638,697

CLASS 148

6.3 3,639,177
9C 3,639,178
11.5F 3,639,179
12.7 3,639,180
15.5 3,639,641
100 3,639,181
103 3,639,182

CLASS 149

2 3,638,698
18 3,639,183
44 3,639,184

CLASS 150

.5 3,638,699

CLASS 151

69 3,638,700

CLASS 152

158 3,638,701
330 3,638,702
3,638,703
353 3,638,704
356 3,638,705
359 3,638,706
365 3,638,707

CLASS 156

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57 3,638,709
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272 3,639,190
284 3,639,191
327 3,639,192
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47WL 3,638,708

CLASS 160

144 3,638,710
330 3,638,711

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35 3,639,197
43 3,639,198
57 3,639,199
116 3,639,200
143 3,639,201
158 3,639,202
173 3,639,203
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CLASS 162

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29 3,639,206
146 3,639,207
158 3,639,642
168 3,639,208
175 3,639,209

CLASS 164

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82 3,638,713
93 3,638,714
85 3,638,715

CLASS 165

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164 3,638,719

CLASS 166

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3,638,722
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224 3,638,724
226 3,638,725
236 3,638,726
259 3,638,727
273 3,638,728
3,638,729
291 3,638,730
314 3,638,731
315 3,638,732

CLASS 169

19 3,638,733
42 3,638,734

CLASS 171

63 3,638,735

CLASS 172

719 3,638,736

CLASS 173

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90 3,638,738
114 3,638,739

CLASS 174

14R 3,639,671
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16B 3,639,673
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50.61 3,639,675
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84S 3,639,677
117FF 3,639,680
138F 3,639,681
145 3,639,678

CLASS 175

53 3,638,740
215 3,638,741
325 3,638,742

CLASS 177

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CLASS 178

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5.4CK 3,639,683
5.4MA 3,639,685
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5.8R 3,639,686
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6.6P 3,639,688
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3,639,701
100.2Z 3,639,697
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175.2C 3,639,702
175.3 3,639,703

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8D 3,638,747
25R 3,638,746
64R 3,638,748
68 3,638,749
79.2R 3,638,750
98 3,638,751

CLASS 181

5R 3,638,752
31B 3,638,753
33R 3,638,754
36R 3,638,755
57 3,638,756

CLASS 182

63 3,638,757
112 3,638,758
194 3,638,759

CLASS 184

6.23 3,638,760

CLASS 187

9 3,638,761
52 3,638,762

CLASS 188

72.6 3,638,763
73.1 3,638,764
73.5 3,638,765
106P 3,638,766
268 3,638,767
294 3,638,768
298 3,638,769

CLASS 192

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3.33 3,638,771
4B 3,638,772
18A 3,638,773
42 3,638,774

CLASS 195

28R 3,639,210
29 3,639,211
51 3,639,212
63 3,639,213
80 3,639,214

CLASS 197

17 3,638,775
186A 3,638,776

CLASS 198

20 3,638,777
31AC 3,638,778
127 3,638,779
130 3,638,780
208 3,638,781
233 3,638,782

CLASS 200

1V 3,639,704
6A 3,639,705
17R 3,639,706
33C 3,639,707
44 3,639,708
51 3,639,709
61.48 3,639,710
83H 3,639,711
148A 3,639,712
148R 3,639,713
153J 3,639,714
166E 3,639,715
168B 3,639,716
172A 3,639,717

CLASS 204

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30 3,639,216
35R 3,639,217
40 3,639,218
47 3,639,219
49 3,639,220
58 3,639,221
94 3,639,222
95 3,639,223
181 3,639,224
212 3,639,225

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45.34 3,638,784
47A 3,638,786
47R 3,638,785
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52R 3,638,788
63.2R 3,638,789
65S 3,638,790

CLASS 208

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143 3,639,227
153 3,639,228
181 3,639,229
213 3,639,230

CLASS 209

12 3,638,791
73 3,638,792

CLASS 210

23 3,639,231
73 3,638,793
98 3,638,794
169 3,638,795
170 3,638,796
393 3,638,797
404 3,638,798
462 3,638,799

CLASS 211

40 3,638,800
57 3,638,801
71 3,638,802
148 3,638,803
177 3,638,814

CLASS 212

8 3,638,804
38 3,638,805
55 3,638,806

CLASS 213

22 3,638,807

CLASS 214

6B 3,638,808
57 3,638,809
75G 3,638,810
77P 3,638,811
83.26 3,638,812
148 3,638,813
390 3,638,815
517 3,638,817
521 3,638,816
762 3,638,818

CLASS 215

9 3,638,819
13 3,638,820
48 3,638,821
100A 3,638,822
3,638,823

CLASS 219

10.67 3,639,718
69E 3,639,719
76 3,639,720
91 3,639,721
127 3,639,722
131R 3,639,723
137 3,639,724
401 3,639,725
413 3,639,726
491 3,639,727

CLASS 220

21 3,638,824
66 3,638,825
69 3,638,826
97D 3,638,827

CLASS 221

176 3,638,828
219 3,638,829
246 3,638,830

CLASS 222

1 3,638,831
16 3,638,832
57 3,638,833
105 3,638,834
107 3,638,835
113 3,638,836
134 3,638,837
136 3,638,838
193 3,638,839
402.24 3,638,840

CLASS 223

38 3,638,841
73 3,638,842

CLASS 224

5G 3,638,843
42.1F 3,638,844

CLASS 226

97 3,638,845
142 3,638,846

CLASS 227

120 3,638,847

CLASS 229

16 3,638,848
28R 3,638,849
33 3,638,850
40 3,638,851
41 3,638,852
51TS 3,638,853

CLASS 233

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CLASS 235

60TK 3,638,855
61.11E 3,639,728
3,639,729
3,639,730
3,639,731
61.12 3,639,732
69 3,639,733
92EA 3,639,734
94 3,639,735
151.3 3,639,737
151.35 3,639,738
152 3,639,736
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153 3,639,740
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160 3,639,742
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181 3,639,744
201 3,638,856

CLASS 236

1B 3,638,857

CLASS 237

50 3,638,858

CLASS 239

102 3,638,859
127 3,638,860
216 3,638,861
265.39 3,638,862
276 3,638,863
280.5 3,638,864
424 3,638,865
544 3,638,866
573 3,638,867

CLASS 240

2SP 3,639,745
2R 3,639,746
2.1 3,639,747
7.1G 3,639,748
10B 3,639,749
11.4R 3,639,750
47 3,639,751
78R 3,639,752

CLASS 241

44 3,638,868
46 3,638,869
140 3,638,870
255 3,638,871

CLASS 242

18.1 3,638,872
45 3,638,873
55.19A 3,638,874
71.2 3,638,875
106 3,638,876
128 3,638,877
129.8 3,638,878
192 3,638,879
3,638,880
204 3,638,881

CLASS 244

15S 3,638,882
1 3,638,883
12D 3,638,884
17.27 3,638,885
42D 3,638,886
102 3,638,887

CLASS 246

182B 3,639,754
182C 3,639,753
187B 3,639,755

CLASS 248

97 3,638,888
206R 3,638,889
215 3,638,890
221 3,638,891
3,638,894
300 3,638,892
312 3,638,893
361R 3,638,895
399 3,638,896
400 3,638,897
441 3,638,898
483 3,638,899
488 3,638,900

CLASS 249

20 3,638,901
28 3,638,902
69 3,638,903
122 3,638,583
213 3,638,904

CLASS 250

41.9TF 3,639,757
41.9G 3,639,756
51.5 3,639,758
3,639,759
3,639,760
68 3,639,761
71 3,639,762
83.3D 3,639,763
3,639,764
83.3H 3,639,765
202 3,639,766
3,639,767
205 3,639,768
211 3,639,769
218 3,639,770
225 3,639,771

CLASS 251

94 3,638,905
145 3,638,906
148 3,638,907
329 3,638,908

CLASS 252

1 3,639,643
8.1 3,639,232
8.5M 3,639,233
8.6 3,639,234
8.75 3,639,235
13 3,639,236
3,639,237
3,639,644
49.6 3,639,238
49.9 3,639,239
52R 3,639,240
54.6 3,639,241
56R 3,639,242
62 3,639,276
62.1 3,639,243
3,639,244
3,639,245
3,639,246
62.57 3,639,247
63.5 3,639,275
78 3,639,277
82 3,639,278
86 3,639,279
88 3,639,280
89 3,639,281
95 3,639,282
98 3,639,283
99 3,639,284
100 3,639,285
109 3,639,286
135 3,639,287
3,639,288
179 3,639,292
180 3,639,293
3,639,645
3,639,646
182 3,639,294
3,639,295

186 3,639,248
300 3,639,249
3,639,250
3,639,251
301.4F 3,639,252
301.4P 3,639,253
301.4S 3,639,254
312 3,639,255
316 3,639,256
3,639,257
3,639,258
3,639,259
355 3,639,262
358 3,639,260
373 3,639,261
389 3,639,263
390 3,639,431
400 3,639,264
411R 3,639,265
421 3,639,266
431 3,639,267
437 3,639,268
3,639,269
439 3,639,647
441 3,639,270
3,639,271
442 3,639,272
455R 3,639,273
465 3,639,648
514 3,639,274
527 3,639,289
545 3,639,290
548 3,639,291

CLASS 254

29A 3,638,909
88 3,638,910
89R 3,638,911
161 3,638,912

CLASS 256

13.1 3,638,913

CLASS 259

1R 3,638,914
4 3,638,915
3,638,916
8 3,638,917
48 3,638,918
95 3,638,919
104 3,638,920
109 3,638,921
154 3,638,922
177 3,638,923

CLASS 260

2R 3,639,296
2.5AJ 3,639,307
2.5FP 3,639,298
3,639,299
3,639,302
3,639,304
3,639,305
2.5B 3,639,306
2.5F 3,639,303
2.5L 3,639,297
3,639,301
2.5N 3,639,649
2.5R 3,639,300
5 3,639,308
9R 3,639,309
17R 3,639,310
17 3,639,311
17.4SG 3,639,312
18N 3,639,313
18R 3,639,650
22EP 3,639,314
22TN 3,639,315
22R 3,639,316
23XA 3,639,318
3,639,319
23H 3,639,317
23.7M 3,639,651
28.5A 3,639,322
28.5B 3,639,323
28.5D 3,639,324
28.5 3,639,320
3,639,321
29.6NR 3,639,327
29.6WB 3,639,325
29.6 3,639,326
3,639,328
30.8DS 3,639,652
31.4R 3,639,330
31.4 3,639,329
31.8 3,639,331
33.8UA 3,639,332
33.8R 3,639,653
37R 3,639,654
41B 3,639,333
45.75C 3,639,335
45.8N 3,639,336
45.9 3,639,334
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3,639,342
47CZ 3,639,341
47EA 3,639,345
47EM 3,639,338
47EN 3,639,344
47ET 3,639,337
3,639,656
47NN 3,639,657
47C 3,639,655
47 3,639,339
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59 3,639,658
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64 3,639,347
67 3,639,348
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75P 3,639,352
75R 3,639,350
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77.5AP 3,639,354
3,639,355
77.5R 3,639,353
78TF 3,639,356
78UA 3,639,357
78L 3,639,359
3,639,360
3,639,659
78R 3,639,358
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78.5 3,639,362
80.3 3,639,363
3,639,364
80.72 3,639,365
82 3,639,366
82.1R 3,639,660
85.1 3,639,367
88.2 3,639,368
3,639,369

88.7 3,639,370

93.1 3,639,371
93.5S 3,639,372
93.7 3,639,373
3,639,374
3,639,375
3,639,376
3,639,377
3,639,378
3,639,379
94.6 3,639,661
94.9D 3,639,381
94.9R 3,639,380
112.5 3,639,382
3,639,383
146T 3,639,662
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158 3,639,385
163 3,639,386
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210.5 3,639,388
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239.3A 3,639,391
239.3B 3,639,666
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243C 3,639,396
247.5R 3,639,397
249 3,639,398
249.5 3,639,399
250 3,639,400
256.4C 3,639,667
256.4E 3,639,401
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268SY 3,639,403
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293.54 3,639,407
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306 3,639,663
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310D 3,639,419
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326.13R 3,639,422
326.3 3,639,421
328 3,639,423
340.2 3,639,425
340.3 3,639,668
343.2R 3,639,426
345.1 3,639,669
345.3 3,639,427
345.9 3,639,428
348.5R 3,639,429
368 3,639,430
396R 3,639,432
397 3,639,433
397.45 3,639,434
397.5 3,639,435
397.7R 3,639,670
404.5 3,639,436
405.6 3,639,437
408 3,639,438
429R 3,639,439
448AD 3,639,664
448.2E 3,639,440
448.8R 3,639,441
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488R 3,639,463
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526N 3,639,466
527N 3,639,467
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543R 3,639,469
544C 3,639,471
544R 3,639,470
545P 3,639,473
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566D 3,639,479
566F 3,639,480
570AB 3,639,481
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591 3,639,483
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610A 3,639,486
613R 3,639,487
618D 3,639,488
619A 3,639,489
624R 3,639,490
654D 3,639,491
655 3,639,492
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672R 3,639,495
674SE 3,639,497
674N 3,639,496
825 3,639,498
829 3,639,499
837 3,639,500
857R 3,639,502
857 3,639,501
860 3,639,503
863 3,639,504
873 3,639,424
3,639,505
3,639,527
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3,639,507
876B 3,639,508
876R 3,639,509
877 3,639,510
878B 3,639,515
3,639,516
878R 3,639,512
3,639,513
878 3,639,511
3,639,514
879 3,639,517
880B 3,639,519
3,639,523
880R 3,639,518
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880 3,639,520
3,639,521
885 3,639,524
888 3,639,525
891 3,639,526
895 3,639,528
897B 3,639,530
897C 3,639,529
920 3,639,531
923 3,639,532
928 3,639,533
930 3,639,534
932 3,639,535
937 3,639,536
940 3,639,537
941 3,639,538
942 3,639,539
949 3,639,540
952 3,639,541
3,639,542
953 3,639,543
966 3,639,544
971 3,639,545
974 3,639,546
989 3,639,547

CLASS 261

6Z 3,638,925
62 3,638,924
130 3,638,926

CLASS 263

6R 3,638,927
28 3,638,928
44 3,638,929
47R 3,638,930

CLASS 264

12 3,639,548
45 3,639,567
51 3,639,549
3,639,550
55 3,639,551
71 3,639,552
75 3,639,573
90 3,639,553
95 3,639,554
140 3,639,555
171 3,639,556
176F 3,639,557

CLASS 266

23R 3,638,931
34L 3,638,932

CLASS 269

60 3,638,933
311 3,638,934
324 3,638,935

CLASS 270

57 3,638,936
58 3,638,937

CLASS 272

79R 3,638,939
83R 3,638,940
3,638,941

CLASS 273

67A 3,638,942
73J 3,638,943
87R 3,638,944
95R 3,638,945
134AC 3,638,946
135AA 3,638,948
135AC 3,638,947
157R 3,638,949
187R 3,638,950

CLASS 274

2 3,638,951
4C 3,638,955
4D 3,638,952
4E 3,638,953
4J 3,638,954

CLASS 277

30 3,638,956
96 3,638,957

CLASS 280

11.35T 3,638,958
3,638,959
16 3,638,960
104.5R 3,638,962
124 3,638,963
150AB 3,638,964
150C 3,638,961
150.5 3,638,965

CLASS 281

21 3,638,966
33 3,638,967

CLASS 285

8 3,638,968
18 3,638,969
24 3,638,970
74 3,638,971
156 3,638,972
184 3,638,973

CLASS 287

52.06 3,638,974
75 3,638,975
90C 3,638,976
99 3,638,977
108 3,638,978
124 3,638,979
189.36F 3,638,980
189.36 3,638,981

CLASS 292

302 3,638,983
341.16 3,638,984

CLASS 293

71 3,638,985

CLASS 294

49 3,638,986
86CG 3,638,987
86.18 3,638,988
86.24 3,638,989
87.2 3,638,990

CLASS 296

23 3,638,991
39R 3,638,992
95R 3,638,993
137E 3,638,994

CLASS 297

85 3,638,995
232 3,638,997
332 3,638,998
332.5 3,638,982
379 3,638,999
386 3,639,000
445 3,639,001
452 3,639,002

CLASS 299

5 3,639,003
10 3,639,004
25 3,639,005
31 3,639,006

CLASS 302

52 3,639,007

CLASS 303

10 3,639,008
21F 3,639,009
22A 3,639,010

CLASS 305

35EB 3,639,011
3,639,012

CLASS 306

33 3,639,013

CLASS 307

10 3,639,772
48 3,639,773
88.3 3,639,774
3,639,775
3,639,776
202 3,639,777
204 3,639,778
235 3,639,780
237 3,639,779
243 3,639,781
252M 3,639,783
252T 3,639,782
260 3,639,784
288 3,639,785
303 3,639,786
3,639,787

CLASS 308

9 3,639,014
26 3,639,015
187.2 3,639,016
193 3,639,019
201 3,639,017
214 3,639,018

CLASS 310

8.1 3,639,788
43 3,639,789
89 3,639,790
90 3,639,791
113 3,639,792
178 3,639,793
231 3,639,794

CLASS 312

184 3,639,020
234.1 3,639,021
245 3,639,022
268 3,639,023
3,639,024
276 3,639,025
295 3,639,026
330 3,639,027
348 3,639,028

CLASS 313

70C 3,639,795
77 3,639,796
82R 3,639,797
85S 3,639,798
85 3,639,799
113 3,639,800
223 3,639,801

CLASS 315

3.5 3,639,802
12 3,639,803
108 3,639,804
122 3,639,805
169 3,639,806

CLASS 317

2C 3,639,807
11E 3,639,808
117 3,639,809
147 3,639,810
234R 3,639,812
234 3,639,811
235R 3,639,813
3,639,814
3,639,815
245 3,639,816

CLASS 318

16 3,639,817
138 3,639,818
3,639,819
147 3,639,820
282 3,639,821
345 3,639,822
595 3,639,823
599 3,639,824
621 3,639,825

CLASS 321

2 3,639,826

CLASS 323

74 3,639,827

CLASS 324

.5 3,639,828
30R 3,639,829
3,639,830
33 3,639,831
34R 3,639,832
51 3,639,833
58.5B 3,639,834
61 3,639,835
154R 3,639,836
158R 3,639,837

CLASS 325

4 3,639,838
64 3,639,839
308 3,639,840
363 3,639,841

CLASS 328

61 3,639,842
116 3,639,843
130 3,639,844
146 3,639,845
151 3,639,846
160 3,639,847
167 3,639,848
228 3,639,849

CLASS 329

50 3,639,850

CLASS 330

38M 3,639,851

CLASS 331

1A 3,639,852
51 3,639,853
94.5 3,639,854
3,639,855
96 3,639,856
107R 3,639,857
108B 3,639,859
108R 3,639,858

CLASS 333

29 3,639,860
71 3,639,861
73W 3,639,862
79 3,639,863
96 3,639,864

CLASS 335

18 3,639,865
132 3,639,866
154 3,639,867
205 3,639,868
207 3,639,869
257 3,639,870
274 3,639,871

CLASS 336

84 3,639,872

CLASS 337

185 3,639,874
187 3,639,873

CLASS 338

2 3,639,875
13 3,639,876
153 3,639,877
174 3,639,878
180 3,639,879
183 3,639,880
190 3,639,881

CLASS 339

10 3,639,882
14R 3,639,883
3,639,884
21R 3,639,885
36 3,639,886
53 3,639,887
75MP 3,639,888
75R 3,639,889
91R 3,639,890
99R 3,639,891
143C 3,639,892
184M 3,639,893

CLASS 340

31A 3,639,894
52A 3,639,895
62 3,639,896
64 3,639,897
71 3,639,898
110 3,639,899
146.1 3,639,900
3,639,901
146.3AC 3,639,903
146.3J 3,639,902
147R 3,639,904

149	3,639,905
	3,639,906
150	3,639,907
166	3,639,908
172.5	3,639,909
	3,639,910
	3,639,911
	3,639,912
	3,639,913
CLASS 350	
3.5	3,639,029
	3,639,030
	3,639,031
	3,639,032
	3,639,033
31	3,639,034
96R	3,639,035
97	3,639,036
126	3,639,037
161	3,639,038
162SF	3,639,039
184	3,638,996
193	3,639,040
CLASS 351	
14	3,639,041
30	3,639,042
38	3,639,043
103	3,639,044
CLASS 352	
37	3,639,045
92	3,639,046
CLASS 353	
101	3,639,047
	3,639,048
CLASS 355	
3	3,639,049
	3,639,050
	3,639,051
	3,639,052
13	3,639,053
18	3,639,054
29	3,639,055
40	3,639,056
51	3,639,057
83	3,639,058
86	3,639,059
104	3,639,060
CLASS 356	
72	3,639,061
97	3,639,062
106	3,639,063
120	3,639,064
225	3,639,065
237	3,639,066
240	3,639,067
CLASS 401	
58	3,639,068
195	3,639,069
199	3,639,070
CLASS 408	
91	3,639,071
CLASS 415	
9	3,639,072
109	3,639,073
110	3,639,074
163	3,639,075
CLASS 416	
30	3,639,076
111	3,639,077
132	3,639,078
	3,639,079
186	3,639,080
CLASS 417	
7	3,639,081
214	3,639,082
282	3,639,083
394	3,639,084
410	3,639,085
454	3,639,086
572	3,639,087
CLASS 418	
74	3,639,088
93	3,639,089
111	3,639,090
156	3,639,091
175	3,639,092
177	3,639,093
CLASS 424	
12	3,639,558
	3,639,559
22	3,639,560
28	3,639,561
	3,639,562
35	3,639,564
	3,639,565
37	3,639,566
43	3,639,568
48	3,639,569
49	3,639,563
54	3,639,570
	3,639,571
63	3,639,572
78	3,639,574
	3,639,575
	3,639,576
88	3,639,577
93	3,639,578
94	3,639,579
116	3,639,580
117	3,639,581
118	3,639,582
125	3,639,583
127	3,639,584
128	3,639,585
153	3,639,586
173	3,639,587
180	3,639,588
195	3,639,589
203	3,639,590
216	3,639,591
	3,639,592
218	3,639,593
224	3,639,594
227	3,639,595
236	3,639,596
238	3,639,597
	3,639,598
239	3,639,599
242	3,639,600
244	3,639,601
250	3,639,602
	3,639,603
270	3,639,604
271	3,639,605
273	3,639,607
274	3,639,606
	3,639,608
	3,639,609
275	3,639,611
	3,639,613
	3,639,614
276	3,639,610
	3,639,612
280	3,639,615
300	3,639,616
	3,639,617
302	3,639,618
304	3,639,619
	3,639,620
	3,639,621
308	3,639,622
311	3,639,623
317	3,639,624
	3,639,625
319	3,639,626
320	3,639,627
	3,639,628
325	3,639,629
	3,639,630
326	3,639,631
	3,639,632
327	3,639,633
330	3,639,634
335	3,639,635
346	3,639,636
	3,639,637
349	3,639,638
CLASS 431	
115	3,639,094
177	3,639,095

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D 8— 14	222,901
65	222,902
233	222,903
	222,904
D 9— 267	222,905
D15— 1	222,906
6	222,907
D25— 1	222,908
D26— 14	222,909
	222,910
	222,911
D33— 3	222,912
	222,913
D34— 4	222,914
15	222,915
	222,916
	222,917
	222,918
	222,919
D48— 31	222,920
D49— 35	222,921
D52— 6	222,922
D54— 12	222,923
	222,924
D57— 1	222,925
D61—	222,926
D72—	222,927
D90— 20	222,928
D95— 3	222,929

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American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
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Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

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1 : 3,638,307	3,638,602	3,639,090	3,639,769	3,639,489	3,639,057
3,638,814	3,638,615	3,639,102	3,639,776	3,639,529	3,639,132
3,639,399	3,638,632	3,639,111	3,639,778	3,639,534	3,639,141
2 : 3,638,742	3,638,640	3,639,156	3,639,781	3,639,622	3,639,301
4 : 3,638,286	3,638,642	3,639,163	3,639,782	3,639,724	3,639,728
3,638,395	3,638,643	3,639,170	3,639,806	3,639,735	3,639,730
3,638,641	3,638,652	3,639,183	3,639,811	3,639,762	3,639,757
3,638,671	3,638,657	3,639,188	3,639,816	10 : 3,638,291	3,639,768
3,638,774	3,638,666	3,639,200	3,639,838	3,638,786	3,639,809
3,638,910	3,638,669	3,639,218	3,639,843	3,638,826	3,639,848
3,639,071	3,638,682	3,639,221	3,639,846	3,638,968	13 : 3,638,762
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3,638,726	3,638,724	3,639,273	3,639,909	3,639,174	3,639,664
6 : 3,638,255	3,638,725	3,639,275	3,639,913	3,639,240	16 : 3,638,871
3,638,282	3,638,732	3,639,282	8 : 3,638,350	3,639,267	17 : 3,638,277
3,638,283	3,638,743	3,639,299	3,638,785	3,639,292	3,638,319
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6 : 222,908
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12 : 222,900
13 : 222,913
17 : 222,902
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